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Part 6

DEPARTMENT OF DEFENSE AUTHORIZATION FOR APPROPRIATIONS FOR FISCAL YEAR 1984

HEARINGS

BEFORE THE

COMMITTEE ON ARMED SERVICES
UNITED STATES SENATE

NINETY-EIGHTH CONGRESS

FIRST SESSION

ON

S. 675

AUTHORIZING APPROPRIATIONS FOR FISCAL YEAR 1984 FOR PROCUREMENT, FOR RESEARCH, DEVELOPMENT, TEST, AND EVALUATION, AND FOR OPERATION AND MAINTENANCE, TO PRESCRIBE PERSONNEL STRENGTHS FOR SUCH FISCAL YEAR FOR THE ARMED FORCES AND FOR CIVILIAN PERSONNEL OF THE DEPARTMENT OF DEFENSE, AND FOR OTHER PURPOSES

PART 6

SEA POWER AND FORCE PROJECTION

MARCH 14, 22, 23, 24; APRIL 6, 7, 1983

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CONTENTS

CHRONOLOGICAL LIST OF WITNESSES

MARITIME NAVAL THREAT ASSESSMENT

MARCH 14, 1983

Page

Butts, Rear Adm. John L., U.S. Navy, Director of Naval Intelligence, accompanied by Vice Adm. Lee Baggett, Jr., U.S. Navy, Director of Naval Warfare 2935

Baggett, Vice Adm. Lee, U.S. Navy Director, Naval Warfare 2958

NAVY SHIPBUILDING PROGRAMS

MARCH 22, 1983

Sawyer, Hon. George, Assistant Secretary of the Navy for Shipbuilding and Logistics, accompanied by Vice Adm. Robert C. Walters, U.S. Navy, Deputy Chief of Naval Operations for Surface Warfare; Vice Adm. Earl B. Fowler, U.S. Navy, Commander of the Naval Sea Systems Command; and Vice Adm. N. R. Thunman, Deputy Chief of Naval Operations for Submarine Warfare 2990

Walters, Vice Adm. Robert C., U.S. Navy, Deputy Chief of Naval Operations for Surface Warfare 2995

U.S. CENTRAL COMMAND AND U.S. READINESS COMMAND

MARCH 23, 1983

Blaker, Dr. James R., Deputy Assistant Secretary of Defense (Policy Analysis) 3102

Kingston, Lt. Gen. Robert C., U.S. Army, Commander in Chief, U.S. Central Command 3108

Hunter, Rear Adm. Charles B., U.S. Navy, Chief of Staff, U.S. Readiness Command 3114

Klein, Brig. Gen. William E., U.S. Army, Assistant Deputy Director for Force Development and Strategic Plans, Organization of the Joint Chiefs of Staff.. 3119

Baginski, Maj. Gen. James I., U.S. Air Force, Director, Deployment Directorate, Joint Deployment Agency 3124

Beers, Rand, Department of State 3137

AIRLIFT PROGRAMS

MARCH 24, 1983

Allen, Gen. James R., U.S. Air Force, Commander in Chief, Military Airlift Command 3150

Skantze, Lt. Gen. Lawrence A., U.S. Air Force, Deputy Chief of Staff, Research, Development, and Acquisition 3160

RESEARCH, WEAPONS AND ASW AIRCRAFT

APRIL 6, 1983

Page

Paisley, Melvyn R., Assistant Secretary of the Navy (Research, Engineering, and Systems), accompanied by Vice Adm. Robert R. Monroe, U.S. Navy, Director (Navy Research, Development, Test, and Evaluation); Vice Adm. R. F. Schoultz, U.S. Navy, Deputy Chief of Naval Operations (Air Warfare); Rear Adm. J. W. Nyquist, U.S. Navy, Director (Surface Combat Systems); Brig. Gen. E. B. Russell, U.S. Marine Corps, Deputy Chief of Staff (Research, Development, and Systems); Rear Adm. Steven Hostettler, U.S. Navy, Director, Joint Cruise Missile Project Office, Naval Sea Systems Command; Gerald A. Cann, Principal Deputy Assistant Secretary of the Navy (Research, Engineering, and Systems); and Richard Metrey, Director for Surface Programs, Office of the Assistant Secretary of the Navy (Research, Engineering, and Systems) 3190

Cann, Gerald A., Principal Deputy Assistant Secretary of the Navy (Research, Engineering, and Systems) 3203

Monroe, Vice Adm. Robert P., U.S. Navy, Director (Navy Research, Development, Test, and Evaluation) 3205

Nyquist, Rear Adm. J. W., U.S. Navy, Director (Surface Combat Systems) 3210

NAVY/MARINE CORPS STRATEGY

APRIL 7, 1983

Lehman, Hon. John F., Jr., Secretary of the Navy 3254

Small, Adm. William N., U.S. Navy, Vice Chief of Naval Operations 3259

Kelley, Gen. Paul X., USMC, Assistant Commandant U.S. Marine Corps 3266

Index i

DEPARTMENT OF DEFENSE AUTHORIZATION FOR APPROPRIATIONS FOR FISCAL YEAR 1984

MONDAY, MARCH 14, 1983

U.S. Senate,
Subcommittee on Sea Power and Force Projection,
Committee on Armed Services,
Washington, D.C.

MARITIME NAVAL THREAT ASSESSMENT

The subcommittee met in executive session at 10 a.m., in room SR-222, Russell Senate Office Building, Senator William S. Cohen (chairman) presiding.

Present: Senators Cohen, Wilson, and Levin.

Staff present: Alan R. Yuspeh, general counsel; Willis D. Smith, deputy staff director and chief scientist for the minority; L. Wayne Arny III, James R. Locher III, Patrick L. Renehan, professional staff members; Mark B. Robinson, research assistant; and Kathleen L. McGuire, staff assistant.

Also present: Jim Dykstra, assistant to Senator Cohen; Hank Steenstra, assistant to Senator Quayle; Arnold Punaro, assistant to Senator Nunn; Bill Lind, assistant to Senator Hart; and Peter Lennon, assistant to Senator Levin.

OPENING STATEMENT OF SENATOR WILLIAM S. COHEN, CHAIRMAN

Senator **Cohen**. Good morning.

Today we are here to receive an assessment from Rear Adm. John Butts, the Director of Naval Intelligence, as to the extent of the maritime threat that faces our military forces. I would also like to recognize Vice Adm. Lee Baggett, the Director of Naval Warfare, who is present to answer any questions that may arise as to what forces and plans the Department has to counter these threats.

Because of the classified nature of the information being presented, we will remain in executive session. If any questions we ask evoke answers that would delve into compartmented data, we will hold them until the end of the hearing. At that time we will clear the room and cover those particular subject matters.

I would like at this time to welcome you both here and congratulate Admiral Butts on his new assignment. From what I have seen over the past 2 years, you have a rather large job ahead of you attempting to fill Admiral Shapiro's shoes. He was frequently before this subcommittee and did an outstanding job in presenting his testimony.

In today's hearings I would like you to cover thoroughly the advances you have seen in Soviet ship, aircraft, and missile construction, as well as their progress in general worldwide naval operations. I would also like to hear your comments on qualitative improvements the Soviets have made in weapons systems.

It is my understanding that you will also address developments in other naval forces around the world. I think this area, which is often ignored, is especially important not only because of the magnitude of the Soviet threat, but because it probably encompasses the most likely threat our forces are going to face.

This year, we in Congress are facing increasing pressures over the difficult economic choices facing the Nation. As part of this, many critics are asking for larger cutbacks in the President's program for rebuilding our defense. Before we can honestly make those kinds of decisions, it is necessary for us to understand fully the developments and the growth in Soviet maritime power. After all, it is the potential military threat we face which should logically determine the extent of our need for expenditures on military forces. We have to remember also to view the advances the Soviets make, especially in their maritime forces, in the context of our vulnerability as essentially an island nation inextricably dependent on the sea lines of communication for the energy and raw materials to fuel our industries. We also have to understand where we are now with respect to our major opponents, and in addition, where we are headed and why.

Gentlemen, although it is not our normal procedure, I think that this type of presentation would lend itself to a format in which, if you would agree, at any time I and other members who may be coming in would feel free to interrupt you and ask questions.

There are several subcommittee hearings taking place right now in other rooms, so I would expect other members to come in as we proceed.

Why don't you begin?

Admiral **Butts**. With your permission, sir, I would like to introduce my statement for the record and then just proceed.

Senator **Cohen**. The statement will be included in full.

[The prepared statement of Rear Admiral Butts follows:]

PREPARED STATEMENT OF REAR ADM. JOHN L. BUTTS, U.S. NAVY, DIRECTOR OF NAVAL INTELLIGENCE

This is my first appearance before this subcommittee as Director of Naval Intelligence. Thank you for the opportunity to appear and to report to you on foreign naval developments, particularly those involving the Soviet Navy.

The death of Leonid Brezhnev has brought an 18-year chapter of Soviet history to an end. Its immediate legacy is a challenging array of foreign and domestic problems, including some military problems of the first order. The new leaders of the Soviet Union have their work cut out for them.

There were major changes in all branches of the Soviet military in those 18 years under Brezhnev. For the Soviet Navy, the changes were reflected in the way the Soviets are building their Navy and in the way in which they conduct naval operations.

Since 1964, the Soviets have built about 150 nuclear powered submarines, 70 diesel submarines, 30 cruisers, 20 destroyers, 145 frigates, 75 amphibious landing ships and air cushion vehicles, and 140 naval auxiliaries and support ships, plus a considerable number of naval aircraft. They also have built four VSTOL aircraft carriers; and they have expanded their naval infantry force from about 4,000 in 1964 to its present size of about 14,000 troops. The Soviet Navy now has enough modern ships and aircraft to provide a naval presence around the world and they are doing so on a day-to-day basis.

The Soviets launched new ships in 1982 at roughly the same pace as 1981, although in both years the number launched was less than the 1980 figure. You will recall that 1980 was the peak year during which six new classes of submarines and large surface combatants appeared. The lower number of overall launches in 1982 (compared to 1980) was due to many factors, including transition to new, more sophisticated designs, and less than one for one replacement.

The Soviets launched the fourth, and probably last, *Kiev*-class aircraft carrier in 1982. The other three are now assigned to the Northern, Pacific, and Black Sea Fleets.

With the last of the *Kiev*-class carriers completed, I believe the Soviets will now devote more effort to building their first aircraft carrier with catapults and arresting gear. Shipyard improvements and other indicators all point to the continued development of a conventional take-off and landing carrier program.

The Soviets are currently completing improvements to Nikolayev Shipyard on the Black Sea, the shipyard that built the *Kiev*-class carriers. These improvements would support construction of a larger aircraft carrier. Long lead time items such as the power plant are believed to be in production at this time.

We expect the carrier will be operational by about 1990. It probably will be about 300 meters long with a displacement of about 60,000 tons. It will almost certainly be nuclear powered, and able to support an air group of about 60 fixed-wing aircraft and helicopters.

In other Soviet naval surface force developments, the second and probably last ship of the *Kirov*-class nuclear-powered guided missile cruiser was fitting out in 1982, with sea trials expected this year. The weapons improvements on this second ship are so extensive that it could be called *Kirov II.* When fully operational, the two *Kirov-class* cruisers will give the Soviet Navy better defenses against air or missile attacks.

With much the same armament, but about half the displacement, a new guided missile cruiser the Soviets are building in the Crimea on the Black Sea is an excellent complement to the *Kirov.* We call it *Krasina.* It is a multipurpose ship armed with antisubmarine, antiship, and air defense weapons.

The *Sovremennyy* guided-missile destroyer class, first appearing in 1980 on sea trials in the Baltic, is best suited for anti-surface ship warfare. In fact, it was the first large modern Soviet combatant built without significant ASW weaponry. It carries 130mm guns, the largest built for a Soviet ship since the 1950s. It also carries an antiship cruise missile.

Similar in size to *Sovremennyy,* the *Udaloy*-class guided-missile destroyer continues in series production. Unlike *Sovremennyy,* the *Udaloy* class is primarily for ASW, and will succeed its predecessors as the main ASW ship in an intregated Soviet task force. It carries the new Helix ASW helicopter and possibly a new sonar.

Grisha- and *Krivak*-class frigates are nearing the end of series production. Fitted mainly for ASW, these two classes now total about 85; three more *Grishas* may be under construction. We have not yet identified a follow-on frigate.

The 1982 surface shipbuilding program in the aggregate added large, heavily armed combatants to the Soviet fleet—a strong continuation in the construction of seven classes of large surface combatants begun in the last decade. The Soviets clearly are making a major effort to attain a surface force capable of going anywhere and competing on an equal footing with the U.S. Navy; and they are putting the same kind of effort into their submarine force.

The Soviets launched the second *Typhoon*-class SSBN last year, and others as believed to be under construction. The *Typhoon* is an entirely new Soviet SSBN design. It is the largest submarine ever built, and like the earlier Soviet *Delta*-class, its missiles can reach most targets in the United States without leaving port or the sanctuary of home waters. It carries 20 MIRVed SS-NX-20 ballistic missiles.

After producing the first of the *Oscar*-class cruise-missile submarine in 1980, the Soviets launched one more in 1982. Twice as large as any previous Soviet SSGN, it is armed with 24 SS-N-19s, a new antiship supersonic cruise missile that is fired while submerged with a maximum range of about 250 miles. This is the same cruise missile carried by the *Kirov.*

Alfa-class nuclear attack submarines are now operational. *Alfa* is the world's fastest (over 40 knots) and may also be the deepest diving submarine. *Alfa* also is unique in its use of a titanium alloy for the pressure hull.

More *Victor III*-class nuclear attack submarines were produced in 1982. In terms both of numbers and operational assignments, *Victors* remain the backbone of the Soviet Navy's nuclear attack submarine force.

Finally, we expect to see a new class of attack submarine follow the *Victor* program, probably beginning this year or next.

The Soviet Navy is also developing a sea launched land attack cruise missile similar to the *U.S. Tomahawk,* and expected to be operational this year.

To complement these submarine, surface combatant and weapon programs, the Soviets have a small but growing amphibious force. In 1982 they launched the second of the *Ivan Rogov*-class LPDS, and completed additional *Ropucha*-class LSTs. They also have the world's largest fleet of amphibious assault air cushion vehicles.

The Soviets are also continuing to work on their ability to replenish their ships while underway. In addition to the 25,000-ton replenishment ship Berezina, the Soviet Navy has about 30 AORs and AOs able to refuel warships alongside while underway; some of them can also transfer solid stores. As a result, the amount of fuel provided by these oilers has increased from 65 percent of naval requirements in the early 1970s to about 80 percent today. Soviet technology for underway replenishment is nearly on a par with the best Western technology. Their operational experience is, however, spotty and we regularly see many Soviet ships refuel bow to stern, at slow speeds or at anchor.

In 1982, Soviet Naval Aviation continued to receive new Backfire bombers. We expect the number of Soviet Naval Aviation Backfire deliveries to increase steadily. The total number of Forger VSTOL fighter-bombers available for *Kiev*-class carriers also increased. Each *Kiev* normally carries 12 or 13 Forgers and 14 to 17 Hormone/Helix helicopters. With these aircraft, Soviet Naval Aviation now can deliver a variety of weapons, for use in striking shipping, conducting ASW, or supporting amphibious operations.

Overall, then, the Soviet shipbuilding effort by the end of 1982 has resulted in a Navy with 4 *Kiev* carriers, 278 other major surface combatants, and 367 submarines.

The steady improvement made to Soviet naval shipyards in 1982 further underscores the USSR's commitment to building the most advanced and capable ships in the world. The Soviets have purposefully developed a huge but underused shipyard capacity, which includes five yards for submarine production, eight for large combatants, and others for auxiliaries and small combatants. A single yard, Severodvinsk, has more building positions for nuclear submarine construction than has the entire U.S. nuclear submarine construction program.

The USSR leads the world in many aspects of shipbuilding. The Soviets are the leaders in the marine application of gas turbines. They increasingly use the section method of construction, which reduces both building time and cost, and permits maximum use of each shipway. They lead in techniques for welding and have state-of-the-art metal cutting equipment. While the Soviets still have relative deficiencies in other aspects of shipbuilding, they have a first-rate overall industry. One additional sign of this is the increase in recent years of ship production for export, most notably Kashin DDGs for India; *Foxtrot*-class submarines for India, Cuba, and Libya; and the *Koni*-class frigate designed expressly for foreign navies. Not since Moscow sold a cruiser and destroyers to Indonesia in the 1950s have we seen such large ships being built for export.

Large numbers of ships and shipyards do not, of themselves, make a country a naval power. It is the use of those naval forces which counts even more than numbers. The Soviets did use their Navy in 1982 and there were several new developments.

The Soviet operation which attracted the most attention was the simulated strike against two US aircraft carriers last fall by Soviet naval Backfire bombers in the western Pacific. On two occasions, Backfires came within about 100 miles of U.S. carriers as part of the overall reaction to one of our exercises. While the Soviets routinely monitor such exercises and simulate various reactions, this was the first use of Backfires against our carriers. It was also the first use of Backfire over the open ocean in the Pacific.

In December, the Soviet carrier *Minsk* operating in the Indian Ocean launched Forger VSTOL aircraft in reaction to U.S. carrier operations. This activity represented the first time Soviet carrier aircraft have intercepted U.S. carrier aircraft. Our pilots stated the Forger intercepts were not very polished. U.S. carrier pilots routinely practice these procedures; and the Soviets would probably like to do more such intercepts as opportunity permits.

Another important development was Shield '82, the largest Warsaw Pact exercise in the Balkans in at least a decade. The participation of the carrier *Kiev* was an interesting aspect. This was its first major amphibious exercise. The Soviets are showing a growing interest in the development of carrier based air support for landing forces and probably already are working on concepts for the employment of their new aircraft carriers.

During 1982, the Soviet Navy kept ships year around in the Mediterranean Sea, the Indian Ocean, the South Atlantic off West Africa, and the South China Sea, and conducted deployments to the Caribbean. Particularly noteworthy in this regard has been Soviet activity at the former U.S. naval complex at Cam Ranh Bay, Viet Nam, to improve their operations in both the South China Sea and the Indian Ocean. There are now Soviet ships always in port at Cam Ranh; and Soviet naval Bear aircraft routinely deploy to Cam Ranh Airfield from where they regularly fly reconnaissance and ASW missions throughout the region.

The overall level of worldwide Soviet out-of-area operations has remained fairly stable since the mid-1970s, measured by ship-days. However, in areas where we once would expect to find a destroyer or frigate size combatant, we now see cruisers and even KIEV carriers. This reflects the Soviets' growing interest in strengthening their influence with Third World nations, as well as balancing deployed Western naval forces. The December 1982 port visit to Bombay by the carrier MINSK is an example of the kind of Soviet ship visits that we are seeing more and more as a matter of routine.

Soviet ocean surveillance in 1982 was marked by high levels of activity in space based systems. The Soviets launched 107 satellites—the highest yearly total to date. All of these had military application and some were dedicated to ocean surveillance.

In addition to the expansion of their own naval capabilities, the Soviets continued in 1982 to export weaponry to Third World countries at the same high levels established in 1981. Weapons deliveries included such relatively sophisticated naval systems as diesel attack submarines, guided missile destroyers, frigates, and missile patrol boats.

For the second year in a row, Cuba remained the principal recipient of Soviet weaponry. In 1981 Cuba received the largest amount of arms since 1962; but the 1982 total was even higher. These massive deliveries allowed Cuban armed forces, and particularly the Cuban Navy, to continue a significant upgrade of their combat capabilities.

Cuba's missile patrol boats are a strong offensive force, especially against undefended shipping. The surface force has been further augmented by the acquisition of a Soviet *Koni*-class frigate. The two *Foxtrot* submarines received in 1979 and 1980 give Havana an important long-range attack capability it has not had heretofore. We believe Cuba will receive additional submarines over the next few years. During 1982 the Cubans also received two Soviet Polnocny LSMs, providing them their first true amphibious capability. The upgrade of Cuban naval forces has been accompanied by a major expansion of Cuban naval facilities.

In conjunction with Havana's Air Force—the largest in Latin America after Brazil—the Cuban Navy poses a credible offensive threat to U.S. forces in the Caribbean, a threat that did not exist as recently as four years ago.

In the Far East, North Korea has renewed its naval competition with South Korea, after a pause in the late 1970s to build up its merchant and fishing fleet. North Korea changed this concentration in 1980 in an attempt to widen its edge over the South, primarily in the vital category of surface-to-surface missile combatants. Highlights of this effort include the launching last year of unique missile-armed frigate; new diesel attack submarines; and the addition of antiship cruise-missile launchers. North Korea now has several different classes of combatants under construction or modification.

This development underscores North Korea's intention to improve its capabilities for coastal defense, amphibious raids, and combat against both South Korean and U.S. naval units. Also, the buildup gives the North a greater patrol capability for its extended 200-mile economic zone and 50-mile military zone declared in 1977.

The Chinese Navy made news in 1982 with its first launching at sea of submarine-launched ballistic missile. This event made China the fifth country to launch a missile from a submarine.

We often forget that China has the world's third largest navy. Most of its major combatants are less than 15 years old, and include an SSBN, two nuclear attack submarines, over 100 conventional submarines, 12 guided missile destroyers (with SSMs), and 23 frigates. As China turns increasingly to the sea for oil and other resources, and as the Soviet naval presence increases in the Western Pacific, the Chinese have stepped up efforts to modernize and expand their naval capabilities. Despite these efforts, China will remain principally a regional naval power for the rest of the century.

Since January 1982 the Libyan Navy has added several new units as part of its expansion program: it acquired another FOXTROT submarine, one additional NANUCHKA missile boat and two more NATYA minesweepers from the Soviets. Seven La Combattante missile boats were also acquired from France. While the Libyan Navy represents a growing and potentially dangerous force in the Mediterranean, it has deficiencies which prevent Qadhafi from exploiting fully its capabilities. Similar problems affect Libya's Air Force.

Returning to a final comment on Soviet Naval developments in 1982, I want to discuss a problem that grows more critical each day. That is the accelerating pace of Soviet acquisition of Western military technology. The Soviets have carried out a massive program to obtain, by legal and illegal means, the most advanced Western technology available. Those of us with specific responsibilities for protecting information are most enthusiastic about the attention the Congress has given to this problem.

Shortly before his death, Chairman Brezhnev emphasized the need to acquire military technology. At an October 1982 gathering of key Soviet military leaders, he stated, "Competition in military technology has sharply intensified, often acquiring a fundamentally new character. Lag in this competition is inadmissible. We expect that our scientists, designers, engineers and technicians will do everything possible to resolve successfully all tasks connected with this." Because of this emphasis, Western technology that has both civilian and military uses almost always finds its way into Soviet military industries first, and civilian industries later. We have seen that take place in everything from microelectronic manufacturing equipment to the Kama Truck Plant, which has produced large numbers of military vehicles now used by the Soviets in Afghanistan.

The means for technology transfer vary. Much information is obtained by the thousands of Soviet researchers and analysts who comb the pages of Western technical journals. Commercial channels, either open or clandestine, provide advanced equipment and know-how. Soviet Bloc intelligence services target defense contractors and high-technology firms. They also target international organizations with access to advanced technology that includes computer data base networks. Visiting Soviet Bloc technical and student delegations consist generally of expert scientists, many of them engaged in military work at home. Soviet candidates in scientific exchange programs routinely request research assignments here for projects that have military applications. Simply attending high-technology trade fairs can help obtain useful information on emerging technologies before security restrictions may shut it off from the Soviet Bloc.

When I said earlier that the pace of technology transfer by the Soviets was accelerating, I had in mind the much shorter length of time it takes before they have our designs in place in their naval equipment. By the mid-decade, they were copying entire families of integrated circuits within two to four years of the time they appeared in U.S. catalogs. By the end of the decade, they would copy and manufacture our newest devices within about two years.

In sum, the transfer of Western technology to the Soviets is a serious and growing problem. It has been a key part of Moscow's efforts to catch up in areas in which it lags, and to widen the gap in areas in which it has the lead. Where we once had an overwhelming qualitative technological edge, that edge is eroding rapidly. If a war ever occurred, we would find ourselves facing Soviet-built weapons at least partly developed with out own technology and tax dollars. Our Chief of Naval Operations, Admiral James D. Watkins, has described it as like "being in a tail chase with ourselves."

Overall Soviet naval developments in 1982 lead to several conclusions.

First, while we await more signs of the military policies to be followed by the Andropov regime, I do not anticipate any early changes of direction regarding the Soviet Navy. The Navy has been allocated approximately the same share of the total military budget for a number of years, so its growth has not been at the expense of other services. The Soviet decision just last year to end military draft deferments for all but a few students is only the most recent sign of a continued commitment to devote scarce resources, in this case manpower, to sustain military power.

The steady, year-after-year expansion of Soviet Navy capabilities shows no signs of slowing down. I think that the Soviets will probably maintain a fairly constant number of about 60 SSNBs well into the next decade, as the TYPHOON and its successor replace older classes. The overall number of general-purpose submarines will decline as obsolescent diesel submarines are retired, but the number of state-of-the-art nuclear-powered ones will increase. The number of principal surface warships will likely decline somewhat, but there will be more of the large, powerful ships.

We expect the Soviets to continue to use our technology and theirs to improve their cruise missiles, air defenses, and naval aviation. These developments will continue the trend of the last decade from a navy designed for a short, intense war toward a navy with a greater endurance, larger weapons loads, and extensive communication and electronic warfare systems. The Soviets seem to have taken to heart what I believe is a key lesson of history, which is that most wars last much longer than they are supposed to.

The primary wartime tasks of the Soviet Navy will continue to be protecting their SSBNs until they can strike, and defending the homeland from Western SSBNs and aircraft carriers. This would entail Soviet attempts to control in war all or part of the Kara, Barents, and Okhotsk Seas, and the Northwest Pacific Basin, and to conduct sea denial operations beyond those areas. As new Western long-range land-attack cruise missiles become operational, moreover, we expect the Soviet Navy to expand its sea denial operations.

At the same time, the greater ability to range farther at sea obviously increases the Soviet Navy's ability to operate against Western sea lanes. As the Soviets have thought more seriously about the possibility of a prolonged war, they have emphasized this role more. I might add that cutting off vital sea lanes is a measure that could be threatened for peacetime political leverage as well.

The Soviet Navy is becoming an increasingly valuable peacetime asset to the Soviet leadership. Al Capone reputedly once said, "You can get better results with a kind word and a gun, than with a kind word alone." The Soviets seem to follow this kind of maxim as they practice an aggressive naval diplomacy. We expect them to expand their level of operations in such areas as the Caribbean and Philippine Seas, West Africa and the southwest Indian Ocean islands. Given the likelihood of continued instability in the Third World, the opportunity for use of such naval diplomacy will undoubtedly increase.

This is not to say the Soviet Navy will alter its singular approach to materiel and crew readiness in discharging its assigned tasks. This approach, which is uniform throughout the Soviet armed forces, aims at ensuring maximum materiel availability in times of crisis through minimum day-to-day use. To the Soviets, it is more important to be ready to go to sea than actually to be at sea—a philosophy that explains why, on the average day, only about 15% of the Soviet Navy is deployed beyond home waters. Limiting materiel wear and tear is the rule even while on distant deployments. For example, during the November 1982–January 1983 deployment to the Caribbean, Soviet Navy ships spent 52 of the total 68 days in port.

Although the Soviet Navy's wartime tasks and approach to readiness should remain basically unchanged during the next decade, it capabilities to operate effectively in an expanding variety of circumstances over broader ocean areas will probably increase. We expect the quality of the Navy's materiel, maintenance, and personnel to further improve; its command and control system to become more responsive and survivable; and its ability to sustain combat operations to increase. Expansion of the Navy's support facilities and capabilities, advances in ocean surveillance systems, increasingly realistic training, and greater out-of-area operational experience all portend continuing improvement in the professionalism, maturity, and proficiency of the Soviet Navy.

In short, Admiral Gorshkov's goal of a "balanced fleet" is still being vigorously pursued. The Soviet Navy, which today poses a clear and present challenge to our national interests, will be even more capable tomorrow. The stronger it becomes relative to our own Navy, the less restrained the leaders of the Andropov regime need be in their political and military diplomacy. This is the growing danger we confront.

STATEMENT OF REAR ADM. JOHN L. BUTTS, U.S. NAVY, DIRECTOR OF NAVAL INTELLIGENCE, ACCOMPANIED BY VICE ADM. LEE BAGGETT, JR., U.S. NAVY, DIRECTOR OF NAVAL WARFARE

Admiral Butts. Thank you, Mr. Chairman. I appreciate the opportunity to be here. I certainly agree with your comments about the difficulties of following Admiral Shapiro. I had the great pleasure of working as his deputy for 2 years and watching him up close. He is absolutely one of our very best intelligence officers. Fortunately he is still in the area and I get to talk to him with great regularity.

I don't want to talk very much about numbers this morning, sir, since everyone knows the Soviets do have a lot of ships, but if you will look at the Brezhnev years, the 18 years, these were the ships that the Soviets built. I might note that as regards nuclear powered submarines, 72 of these were ballistic missile submarines. During the same period, the United States built three SSBN's. A not generally appreciated fact is that it was not until after we had launched the last of our Polaris/Poseidon submarines that the Soviet launched the first of their *Yankee* class.

A little closer to home, these were the submarines and the major surface ships which the Soviets launched this past year, and this is the forecast for the 1983 additions. Some interesting kinds of ships and submarines, and I will talk more about each of them in more detail.

SOVIET AVIATION AT SEA

Starting first with Soviet aviation at sea, this past year the Soviets launched the fourth, and we believe the last of their *Kiev* class aircraft carriers. This 38,000 ton ship, unit No. 4, at Nikolayev shipyard in the Black Sea, is like its three predecessors equipped to carry the Forger class V/STOL aircraft and helicopters.

Senator COHEN. How many aircraft would that carry?

Admiral BUTTS. 12 to 13 Forgers, Mr. Chairman, and 14 to 17 helicopters, depending upon the exact configuration, not a large aircraft load.

Senator COHEN. We have this debate many times during the course of the year, and while Senator Hart is not here but Senator Hart's staff member is here, he in fact is a leading proponent of the smaller aircraft carriers of 40,000 tons with a V/STOL capability or even conventional capability, and we hear, of course, from time to time that these ships are quite vulnerable.

What about as compared to a larger aircraft carrier, what would be the relative vulnerability of the *Kiev* class?

Admiral BUTTS. The *Kiev* class carrier, with the Forger aircraft, with a maximum radius of about 195 nautical miles, with only 12 to 13 aircraft, would not compare favorably at all with a ship like the U.S.S. *Enterprise* with 60 aircraft with a combat radius of 500 to 600 nautical miles.

Admiral BAGGETT. They would be weather-limited also. The *Kiev* class is just about the equivalent of the LHD-1, which is in the budget, and the LHA-1. For example, in a South Atlantic environment, such as south of the Falklands, the weather limitations would be detrimental to that class compared to the larger carriers.

Senator COHEN. So you would compare it to the LHB-1 that we are building now to carry the Harrier.

Admiral BAGGETT. Yes, sir.

Admiral BUTTS. Various Soviet activities, including some improvements they have made to their shipyard at Nikolayev [deleted] the acquisition of two very large floating drydocks which are substantially larger than anything that they need for what they have in their inventory, and a lot of verbal and written references to a CTOL carrier program, including comments recently, that is, within the last several months, by Soviet attachés, all point to Soviet construction of a true aircraft carrier.

[Deleted] this direction (indicating).

[Deleted.]

About [deleted] they began to work at it again rather vigorously. Work has proceeded forward fairly well apace, and [deleted]. It is our technology, but most likely [deleted].

Senator Cohen. The technology that we gave to [deleted].

Admiral Butts. Yes, sir, [deleted]. It is very easy [deleted] so I am told by the engineers, to figure out how to get [deleted].

If you take the [deleted].

Overall, there's almost [deleted] of useable building way length at that shipyard.

This area is the area which [deleted].

Incidentally, Mr. Chairman, [deleted].

One factor that is another interesting one to us is that the Soviets [deleted].

What that means to us in the intelligence community is that [deleted].

Another interesting development [deleted].

Turning to other kinds of major combatants, the Soviets launched the second, and we believe the last, of their *Kirov*-class guided missile, nuclear powered cruisers this past year. This is also a large ship, about 28,000 tons. It has an innovative propulsion system. Its principal power is nuclear reactor. It has two reactors, but it also uses a fossil fueled superheater to get some extra speed, and the top speed of the ship is probably at least [deleted] knots.

This is one of the most heavily armed ships in the world, with 20 of the SS-N-19 antiship missiles. This is the long range, about 270 nautical miles, supersonic cruise missile, a Gatling gun, or a rotating cylinder arrangement of the SA-N-6, the best of the Soviet long range high altitude SAM systems, the twin 130-millimeter guns, which are the largest guns in the Soviet inventory, several different other kinds of weapon systems, and a full ASW system on the ship.

The Soviets have increasingly put ASW weapons even on their very largest ships. We believe that the second *Kirov* is the last of this class.

Senator Cohen. Why would they build only two?

Admiral Butts. I think probably because of expense. It is an expensive ship, and they can use this for command and control purposes, one in the Northern Fleet, one in the Pacific Fleet. I believe the second one will transfer to the Pacific Fleet, and use it as a core of the surface action group, maybe eventually to mate up with an aircraft carrier by end of the decade.

Senator Cohen. Sort of like our battleships, only a smaller version?

Admiral Butts. Yes, sir, but a very multipurpose kind of ship.

This is [Deleted] one of the two large floating drydocks which I mentioned to you. These docks are 80,000 ton docks and will accommodate a full-sized aircraft carrier. One of these was built by the Swedes and one was built by Japan to Soviet specifications.

Senator Cohen. Are there negotiations going on now with either the Swedes or the Japanese for another one?

Admiral Butts. There have been reports to that effect, sir, but I have not seen anything firm. In fact, one report I saw about 6 weeks ago that suggested they were [deleted].

Senator COHEN. Where were they looking?

Admiral BUTTS. In [deleted] at that time.

Senator COHEN. Counsel here is saying that we were successful somehow in persuading the [deleted] that they were pursuing policies inconsistent with not only their best interests but our best interests in providing the Soviets with these systems.

Admiral BUTTS. Those are very capable docks. The Soviets have used them very extensively for a wide variety of purposes. The one in the Pacific they have used very regularly for their carrier *Minsk,* which is in the Pacific fleet, and obviously they have gotten great mileage out of it.

If we could persuade the Japanese or the Swedes or others not to sell things like that to the Soviets, it would be in our interest.

This is a new guided missile cruiser in the Black Sea. If you have seen the new Soviet military power publication, this is the cruiser which is referred to as *Krasina,* K-r-a-s-i-n-a. That is the new NATO nickname for this particular ship. It is a 12,000 to 14,000 ton ship. You can see how it compares with a 10,000 ton *Kara* here; it is a smaller version of *Kirov,* it is a very heavily armed ship with long range surface-to-surface, long range surface-to-air, and ASW weapons, including the increasingly popular helicopter platform.

This is the *Sovremennyy.* [Deleted] of these ships have been launched. Two are operational. The *Sovremennyy* is being built in the Baltic. It is principally an anti-surface ship weapons platform. Its principal armament is [deleted].

Senator COHEN. How do you defend against something like that?

Admiral BUTTS. That is because the platform has to come within [deleted] the best way is to shoot the platform.

Senator COHEN. And once it launches?

Admiral BAGGETT. Once it launches, [deleted]. But it is a defense in depth requirement we would really have to defeat it with area defense such as the standard missile we have on the Aegis cruiser. Closer in, we would rely on the vulcan phalanx system, (the CIWS, Close-in Weapon System) and also the Ram missile, the Rolling Airframe Missile, which is a fire and forget missile [deleted].

The Rolling Airframe Missile [deleted].

Senator COHEN. We have had some difficulty persuading the Pentagon to go with that missile.

Admiral BAGGETT. We are behind the Rolling Airframe Missile, Mr. Chairman. I don't think anybody is not supporting it. It has had some schedule problems downstream.

[Deleted.] In the last firings we have had [deleted] hits [deleted] against representative target drones [deleted].

Admiral BUTTS. Another class of destroyer also being built in the Baltic, [deleted] of these launched to date, with two operational, is called *Udaloy,* and it is principally an anti-submarine warfare platform with standard SS-N-14 ASW missiles as its principal argument, but like all of the other Soviet ships, it has an additional suit of armament as well, and in this case, the smaller 100 millimeter as opposed to the 130-millimeter guns on the *Sovremennyy.*

This ship has an innovative propulsion system. It uses the very latest Soviet gas turbine technology, and the Soviets are one of the world's leaders in gas turbine propulsion.

The helicopter which is replacing the *Hormone* to be used on ships like the *Udaloy* is called *Helix*. It has a little longer endurance, slightly longer or bigger ordnance load, but perhaps more importantly, it has the capability to autohover, which for localization or attack purposes gives it some capabilities that the *Hormone* does not have.

Now, at a glance then, sir, these are the major surface combatants under construction. I didn't mention the *Krivak* and the old *Grisha*. These programs are continuing, although perhaps becoming near the end.

The *Krasina,* which we used to call the Black-Com-1, the *Sovremennyy,* the *Kirov* and the *Kiev* were the last of these ships being launched this year. These are the ships continuing in construction [deleted] on into 1983.

Senator COHEN. What does that suggest in terms of a strategic plan? Is there a change, and if so, what does it portend?

Admiral BUTTS. No, sir, we have talked about the reason for *Kirov*. The destroyers, they are continuing with their antisurface ship platform and antisubmarine platform and are following on with their true carrier to relieve *Kiev* and her three sister ships which are not really very capable ships.

In the aggregate, I think the Soviets are equipping themselves well to carry out their primary task, which is protection of their SSBN force from use and to carry out their additional tasks of interdiction of sea lines of communication and kind of generally repelling boarders, as we see it.

Senator COHEN. Repelling what?

Admiral BUTTS. Repelling boarders, in old Navy terminology.

Senator COHEN. You don't see a change in strategy in the development of power projection as a naval capability?

Admiral BUTTS. They have had, for a long time, had the capability to project power. I don't see this——

Senator COHEN. Not with the small aircraft carrier, they haven't had much capability.

Admiral BUTTS. No, sir, that is true, but in Third World areas, the kinds of things in which power projection is thought of these days, they have had the capability for a number of years. A true aircraft carrier by the end of the decade will give them a power, the beginnings of a power projection capability by U.S. standards which they have not had heretofore.

If you are sitting in a Third World country and you look at *Kiev,* that doesn't really look that much different from the U.S.S. *Enterprise*. You and I know that there are enormous differences, but the Third World country really doesn't perceive it as such. And so if you take a carrier like *Minsk* and operate it in the Indian Ocean, that can be seen as a fairly formidable force by people in the Indian Ocean.

Senator COHEN. But you don't see it as a qualitative jump, then, in their ability to truly project power, as far as we are concerned?

Admiral BUTTS. If they succeed in launching an aircraft carrier by the end of the decade, 60,000 to 70,000 ship, capable of carrying 60 to 80 aircraft, and if they get the aircraft right to match the ship, the answer to your question, sir, would be yes, that would be a qualitative jump over what they now have.

Senator COHEN. You said "if." Based upon your intelligence estimates, is this the plan today?

Admiral BUTTS. Yes, sir.

Senator COHEN. So if your intelligence is correct, there will be a qualitative jump in their capability.

Admiral BUTTS. Yes, sir.

Of course, this is a new field for them, [deleted].

Senator COHEN. You don't yet [deleted].

Admiral BUTTS. No, sir.

Senator COHEN. How would you determine the [deleted].

Admiral BUTTS. We would hope to [deleted].

Senator COHEN. They have only had the [deleted].

Admiral BUTTS. [deleted].

Senator COHEN. [Deleted].

Admiral BUTTS. That was the latest coverage we had of that [Deleted].

Senator COHEN. Do you see [deleted].

Admiral BUTTS. [Deleted].

Look at another way, there are a number of ships we haven't talked about adding up to the rest of the Soviet navy, the minor combatants and the many auxiliaries, heavy in oceanographic research and repair ships. [Deleted]. The *Bal'Zam AgI*, and this is the one that was off the U.S. east coast monitoring the sea trials of the U.S.S. *Michigan*, and it is a keel up *AgI* construction, a very capable ship.

This also, we believe, is the ship which [deleted].

This is another interesting ship. This is a large [deleted] for that kind of activity.

Now, turning to the Soviet submarine force, the second Typhoon was launched this past year. Typhoon, at about [deleted] tons, is the largest submarine in the world. [Deleted]. The Typhoon is about the same length as the U.S.S. *Trident* class, but it is substantially larger in displacement [deleted].

The Typhoon is a [deleted]. The SS-NX-20 has the potential to be the first good submarine-launched ballistic missile that the Soviets have. The SS-N-6 fired from the *Yankee's* the SS-N-8, the SS-N-18 are not really very accurate missiles. The SS-NX-20, [deleted] and I can talk about that in more detail, sir, in a later session, if you would like.

SUBMARINE OSCAR

The other large submarine which attracted attention, *Oscar*, the second *Oscar* was also launched this past year. This submarine is about the same size as the *Delta* ballistic missile submarine. This is a cruise missile submarine with 12 missile tubes on a side, outboard, and carries the same SS-N-19 missile which is carried by the *Kirov's*. The Soviets are great for standardizing weapons systems from one platform to another. This is the 270 nautical mile supersonic cruise missile.

Oscar has recently [deleted].

The *Alfa* the world's fastest submarine, is the one with the titanium hull. It took the Soviets a long time to build the first *Alfa* [deleted]. There are six of these submarines now operational. [Deleted].

We think that *Alfa* construction is continuing. [Deleted.]

We have been expecting [deleted].

The *Victor,* the *Victor* in its three configuration, *Victor 1, Victor 2, Victor 3,* is really the workhorse family of the Soviet attack submarine force. The *Victor 3* is unique from the others in that it has this large pod about 30 feet long on the top of the vertical stabilizer. We believe that this is the housing for a towed acoustic array. Our submarines have used arrays [deleted] the submarine for a number of years. [Deleted].

These are [deleted] the eight *Yankee* class submarines which have had their missile tubes, ballistic-missile tubes removed [deleted] to stay within the SALT limits. For a long time we wondered what the Soviets were going to do with these *Yankees.* We changed them from SSBN's to SSUN's—that stands for undesignated.

[Deleted.]

The Soviets already have in test a somewhat shorter range cruise missile, the SS-NX-21, which has a range of perhaps 2,100 kilometers. It is a [deleted].

This is a [deleted].

The Soviets have used their *Victors* as another kind of workhorse. This is a *Victor 1.* This is [deleted] photograph. We have more recent photography of this particular submarine last summer along side a hospital ship in the Mediterranean. I will talk a little bit more about that arrangement or association in a moment.

[Deleted.]

To this point in time, in fact, we know that our ASW systems are more capable than theirs. We also understand the phenomenology which they are trying to exploit, and we intend to remain in that mode, sir.

Those [deleted] submarines as well, and they will accommodate [deleted]. I am told the [deleted] for [deleted] comparison.

[Deleted.]

These are a few [deleted]. The Soviets have the largest torpedo inventory in the world, about [deleted] torpedoes overall. Part of that is because they never throw anything away. They have a lot of old steam torpedoes.

Of course, it was a World War II steam torpedo that sank the *Belgrano.*

The Soviets also have the largest force of mines in the world, and also the largest number of mine-capable ships in their inventory.

Supporting all of the Soviet ship developments is an enormous infrastructure. They have 5 shipyards which build submarines, 8 which build surface combatants, and 20 which build auxiliaries. This one shipyard which encompasses Severodvinsk in the northern fleet, an area called Yagry Island, where they build the Delta and Typhoon [deleted] has more shipbuilding positions for nuclear submarines than all of the rest of the United States combined. [Deleted.] The United States has 12 shipbuilding positions at this time, so configured.

[Deleted.]

I mentioned a moment ago that the Soviets are leaders in marine gas turbine technology. These are some of the other kinds of things that the Soviets do particularly well.

In the titanium welding, for example [deleted]. So there are certain areas of technology in which they have become quite proficient.

Aviation programs——

TYPHOON IMPROVEMENTS

Senator **Cohen**. Admiral, before you go, would you explain, if you can at this level, improvements made in the Typhoon?

Admiral **Butts**. Improvements made in the Typhoon as opposed to the Delta?

Senator **Cohen**. Improvements in general—we talked about this the other day. In the past several years we have been told that the Soviets have sacrificed quieting in favor of speed and size.

What is the situation now?

Admiral **Butts**. Overall, sir, the Soviets have been working very actively [deleted]. That is quite an improvement for the Soviets because for many years we have regarded their submarines as clunkers. [Deleted].

Along with the acoustic quieting, the Soviets are also [deleted].

Admiral **Baggett**. [Deleted].

The process, as you know, Mr. Chairman, is not all that complex [deleted].

Senator **Cohen**. Compare this to when the SS-18's were developed. We were told the Soviets built a bigger misile and warhead to make up for lack of accuracy, and then the SS-18 evolved into a missile which is almost if not just as accurate as our Minuteman, and it seems that the same thing has taken place with their submarines. Before we were told, well, it is bigger and it is faster, but it is noisier, therefore easier for us to detect, and now they are coming out with the follow-on models which are bigger, faster, and harder to detect.

Admiral **Butts**. Clearly the Soviets view their missile submarine force as the meat and potatoes of the navy. They want to do everything they can to protect it.

They recognize our acoustic advantage and perhaps our operational advantage and are trying to overcome that. They are handicapped in some of their older submarines in the way the submarines were built in the first place, [deleted] which Admiral Baggett mentioned, which are critical. There is no indication that they have made any sweeping changes, but they are getting better and better, and it is still a black science. Acoustic quieting is not easy. Admiral Baggett mentioned that they had in fact successfully [deleted].

BACKFIRE BOMBER

Backfire is still the foremost aircraft for Soviet naval aviation. They now have about [deleted] of these aircraft assigned to Soviet aviation.

Senator **Cohen**. What is the rate of production for these aircraft?

Admiral **Butts**. I think for about [deleted] per year. I will get that exact figure for you.

Senator **Cohen**. If you would. I think they agreed to limit their production to 30 a year under SALT II, and my understanding was that they were increasing that rate of production in violation.

Admiral **Butts**. You are talking overall. The Soviet navy has been getting about [deleted] per year.

Senator **Cohen**. What information do you have concerning rates of production?

Admiral **Butts**. Overall, I can get that figure for the record, sir. I think that the last figure I saw suggested something more than 30.

[The information follows:]

BACKFIRE BOMBER PRODUCTION

A recent review of the evidence has produced agreement in the Intelligence Community that the Backfire continues to be produced at a stable rate of 30 aircraft per year. [Deleted.]

Admiral **Baggett**. [Deleted.]

Admiral **Butts**. This is the Backfire regiments [deleted].

Senator **Wilson**. Admiral, could you go back one slide?

I cannot tell, but it looks to me as though each of the aircraft is in sort of a depressed pod.

Admiral **Butts**. Each one is in a revetment, yes, sir, for protection, and this is typical of Soviet aircraft protection, not only for the navy, but for the Soviet air forces as well.

Senator **Wilson**. In other words, that is supposed to protect them from everything but a direct hit?

Admiral **Butts**. Yes, sir. If you get a near burst on the ground, unless it is right at the entrance to the revetment, it will provide a large degree of protection.

Senator **Wilson**. We just saw something similar to that in Israel except even better. They actually covered it.

Admiral **Butts**. The Soviets have bunkered some of their tactical fighter regiments, particularly in Eastern Europe. We see that as a common hallmark, and that is very similar to what the Israelis are using, the same type of bunkered revetments.

In addition to the Soviet reaction to our carrier, there were any of a number of other kinds of Soviet naval activity around the world which attracted our attention this past year, and I would like to just mention a couple of them.

When the *Minsk* was in the Indian Ocean, Forger aircraft from *Minsk* intercepted U.S. A-7's. This is the first time this has been done at sea. Also, the Forger's [deleted]. The *Minsk* didn't have a very successful deployment. She had some engineering problems. But she did get from the Soviet Pacific fleet to the Indian Ocean and back home in 108 days and didn't have to be towed back in. She was dead in the water a couple of times, belching black smoke a couple of times, and there was an oil slick at least once, but overall it was, I guess, by Soviet standards a fairly successful operation.

Senator **Wilson**. Do you know what caused her to go dead in the water, what kind of difficulty?

Admiral **Butts**. We think that they have been having some kinds of propulsion plant control difficulties on that ship since they built her. They have not had those kinds of problems on her sister ship *Kiev*. *Kiev* is a much more professionally operated platform than is *Minsk*. And that may be a function of fleet subordination or a function of who happens to be in command.

The Soviets tend to leave their commanding officers in command for long periods of time, 6 years or upward. In fact, the longest one of which we are aware, we know—and this is fact—[deleted]. I guess they were hanging him around at sea until he finally got it right.

My point is, sir, the Soviets also tend to train their own relief, so if the commanding officer is proficient, then his relief is likely to be proficient. If he is inept, we hope that he will pass along those traits as well.

Senator COHEN. Admiral, has there been a change in the tempo of operations that you have noticed?

Admiral BUTTS. Only slightly, sir, but in certain key areas, I will show you a couple of instances, it is an attention getter, and I have got a bar graph a little later on that shows you this slant, and over the last few years it really hasn't been that pronounced, but it is going up.

This is the Forger aircraft I mentioned before. It is not a very good airplane. Some of our aviation analysis describe it as an airplane that should not be left out at night by itself. I don't know if it is that bad, but the Soviets clearly need a better aircraft, [deleted].

FORGER/HARRIER COMPARISONS

Senator COHEN. How does this compare with the Harrier?

Admiral BUTTS. This really does not compare with the Harrier. The Harrier is a much more effective and capable aircraft, sir. I would be happy to give you a side-by-side comparison for the record, look at the statistics on this one and Harrier. Harrier really jumps out at you as being a very capable plane.

[The information follows:]

FORGER/HARRIER COMPARISON

Performance characteristics for the YAK-36 Forger A and the AV-8A Harrier are as follows:

	Forger A	Harrier
IOC	1976	1974.
Sea level max spd (kn)	[Deleted]	640.
Combat ceiling (m)	[Deleted]	15,240.
Ordnance capacity [1] (kg)	[Deleted]	3,600.
Nominal combat radius [2] (nmi)	[Deleted]	250.
Armament options	[Deleted] bombs; [deleted] gun pods; air-to-air missiles; air-to-ground rockets; tactical air-to-surface missiles.	1,000 lb bombs; 30 mm guns; air-to-air missiles; air-to-ground rockets.

[1] Although Forger's four weapons pylons are each capable of carrying [deleted] restrictions imposed [deleted] functionally limit the combat load [deleted].

[2] Combat radius is based on a vertical take-off and landing and no in-flight refueling. Harrier's radius, using a short take-off and one in-flight refueling, is about 1,500 nmi. [Deleted.]

Admiral BUTTS. Another aviation development which has attracted our attention is the outfitting of Soviet Bear bombers with air-to-surface missiles, AS-4's, the same missiles carried by the Backfires. The Soviet Air Force has long had a secondary mission of supporting the Soviet Navy. [Deleted.]

Another kind of activity the Soviets are increasingly becoming involved with is amphibious training. This is a large exercise down in the Black Sea this year. It wasn't quite as large as the exercise in the Baltic in 1981, but increasingly the Soviets are devoting attention to their amphibious training and to the naval infantry force that goes with it. Since 1964 they have increased from 4,000 to 14,000. It is a small elite force.

SOVIET AMPHIBIOUS FORCE

Overall, the Soviet amphibious force we believe is intended for operations principally in the Black Sea and the Baltic.

Senator **COHEN**. What about their LCAC's?

Admiral **BUTTS**. Yes. This is the AIST class. They have [deleted] air-cushioned vehicles. [Deleted]. This is the largest, and then they have two smaller kinds.

Senator **COHEN**. How many do they have?

Admiral **BUTTS**. [Deleted] overall.

Senator **WILSON**. Excuse me. Before you go on, what speed do those make?

Admiral **BUTTS**. About [deleted] knots.

Senator **WILSON**. What is their deployment?

Admiral **BUTTS**. They operate from a ship like this, for example, the *Ivan Rogov Lpd,* they come out of a dock and go across the surface of the water and right up onto the beach carrying troops or armored vehicles, and they actually go all the way aground before they discharge their passengers and cargo, part of an amphibious landing force.

Senator **WILSON**. What speed do they make leaving the water, going ashore?

Admiral **BUTTS**. They can transition, if the terrain is relatively smooth, they can transition from water to land at speeds upwards of [deleted] knots.

Admiral **BAGGETT**. To give you a feel, the LCAC program we have is comparable to this in terms of speed. The LCAC's that we are developing which have an IOC of [deleted] will have a [deleted] capability transitioning from the landing ship well into the sea. The terrain will largely determine how fast they can go, but down the beach they would make [deleted]. The range capability is out to [deleted] miles, for our LCAC's.

As I say, there are some 12 craft now in the budget for LCAC, but we have not yet determined what the inventory objective should be.

The biggest benefit you can get from an air-cushioned vehicle such as this is the ability to get the troops and the equipment ashore in the assault wave without having to alert the enemy with all the beach preparations and the minesweeping that goes with a conventional displacement hull. It is very complementary to our helicopter-borne amphibious assault, and allows you to carry equipment up to and including tanks in landing craft such as this.

Senator WILSON. In terms of the capacity, how does it relate to a whole conventional amphibious operation?

Admiral BAGGETT. It will not carry the same load as the LCU, which is the largest assault craft we have. They are comparable to the LCM-8 class. They have a greater capacity than those which are the real workhorses of the amphibious assault.

We are looking also at the landing craft air-cushion vehicle, as a platform that perhaps would offer us [deleted].

Senator WILSON. Thank you.

Admiral BUTTS. The Soviets also are continuing conventional amphibious developments [deleted].

Mr. Chairman, responding to your question a moment ago about Soviet tempo of operations, one of the areas in which the tempo is sharply up is at Cam Ranh Bay. [deleted].

Today there are [deleted]. At the same time that this operation tempo in and out of Cam Ranh Bay in South Vietnam has gone up, overall Soviet levels in the Indian Ocean have gone down. They are using this port as a way station for ships from their Pacific fleet going to and from the Indian Ocean. The Soviet Indian Ocean force is supported almost exclusively now by the Soviet Pacific fleet. A few years ago, when the Soviets first began to put ships there, they came from all of the Soviet fleet areas. Now it is almost exclusively the Pacific fleet mission.

I mentioned the hospital ship a moment ago. You frequently will find a submarine sitting alongside this hospital ship, and we have seen that also in the Mediterranean. The Soviets routinely use their hospital ships to provide some kinds of support I think other than medical to their deployed forces, principally their submarines.

I learned that this does not contravene the Geneva Convention. You can in fact use hospital ships for whatever you choose to use them for up until the point that hostilities actually start. At that point you declare a ship as a hospital ship, and then it can do nothing but hospital kinds of things, before then, fair game.

Senator COHEN. How do you know it is a hospital ship?

Admiral BUTTS. First of all, in this case——

Senator COHEN. It's painted white?

Admiral BUTTS. It is painted white, has red crosses on the stack, and the Soviets tell us it is a hospital ship.

Senator COHEN. I know that, but how do you know it?

Admiral BUTTS. [Deleted] and the Soviets have used them in far away places to provide some limited local support to local populations.

Senator WILSON. What if we see a white *Kirov* class with big red crosses?

Senator COHEN. I just wonder what kind of supplies they could give to a submarine.

Admiral BUTTS. You might give food. You could also have some small electronics, spare parts, those kinds of things.

And you would be expected that any ship this size would have, particularly even a hospital ship, would have machine shops to support itself, and therefore they could probably do certain kinds of limited machine work.

Senator LEVIN. How about recreational facilities?

Admiral BUTTS. Probably that as well.

Senator COHEN. A lot of nurses on board.

Senator LEVIN. Put that No. 1 on your list.

SOVIET FLOATING DOCK

Admiral BUTTS. The Soviets have also put a floating drydock up in Saigon and we think they intend to use that for both naval and commercial purposes. This dock will handle almost any submarine they have, surface combatants up through guided missile destroyer size.

Your question about out-of-area deployments, if you start all the way back in 1970, it is really not that great an increase. It has been kind of up through the period 1973–74 when it peaked out. It began to go down and came back up, hit a peak in 1980 and is now going back up again. Overall, nothing startling there. It is just that we now see Soviet ships in places where we didn't used to see them, and we see larger ships, more capable ships.

Senator COHEN. What about their operating tempo, in terms of actual days at sea? We are told that part of the Soviet strategy is to keep their ships tied up a lot of time and not to use them very much.

Admiral BUTTS. That remains the same, sir. The Soviet objective, we believe, still remains to be ready to fight the day the war starts, and that means operating ships at a low tempo until the actual beginning of combat.

Senator COHEN. How does that impact on their training in terms of their capability?

Admiral BUTTS. We really don't know the answer to that. We believe that if you are going to be effective, you have got to stand away and train repeatedly. The Soviets train their people intensively up to a certain level of competence, and then they deploy. Not every Soviet ship deploys. There are only certain ones which do, and while deployed, they operate very little.

Clearly, the Soviets believe that the combination of circumstances, that is, the training, the intensive training before they deploy, the fact of keeping people in command for long periods of time, the fact of very slow turnover in their crews, [deleted] that in the aggregate that may be why they have a comfortable feeling about their operational proficiency.

What we do see says that the weapons systems that they have work more often than not, [deleted].

They launch their missiles in ways that we do not and have apparently great confidence in their missile systems and their reliability.

But whether or not all of that adds up to an effective operational platform in a combat situation by our standards, I really don't know if we can measure that because we operate our system so differently.

Senator COHEN. Can you draw the kind of comparison? For example, what the Soviets do is fire their missiles and guns a lot more than we do. We stay out at sea and operate at almost a wartime tempo, constantly being on alert, conducting night operations, recoveries, and so forth. And yet when we exercise the ships, we don't fire missiles very much. We might fire one a year.

Do you have a situation where we may be more operationally capable in running our ships and yet deficient in terms of actually fighting a war, as opposed to the Soviets having the ability of fighting a war, namely, firing their missiles and systems, but not being as capable operationally?

Does that type of polarity exist?

Admiral BAGGETT. I think it is fair to say that [deleted].

I would parenthetically say that where a man is not in the loop, during the firing of a missile, where the missile is relying on an automated fire control system, you are really validating the missile system, and I don't categorize that as training, per se. It is training from the standpoint of proof positive that their maintenance was properly done; and that the spare parts for it were there; and the supportive fire control system kept the missile in flight to the target. Those types are what I call proofing or system validation tests—they are not really training—[deleted].

Senator COHEN. What you are saying is that we should run simulated tests to keep our crews proficient at firing missiles themselves, and that missile launches may test out the technical aspects of the missile itself but don't engage the other capabilities.

Admiral BAGGETT. We have fired certain ordnance that is very expensive to determine a high confidence in performance and we do that in fleet exercises and under as realistic conditions as we can do. I am just saying that those firings are categorized as training using, say, a Phoenix missile, [deleted] in how to push the button and watch the missile go.

We do that largely in dome simulator trainers, and we monitor them in the air combat maneuvering range environments to determine whether or not that pilot properly fired the missile in terms of engageability within the launch parameters of that air-to-air missile, for example, without actually expending ordnance.

That is not a money saving device on the Navy's account. [Deleted.]

Sonobuoys, for example, [deleted].

We don't see the Soviets cutting back.

Admiral BUTTS. This is an unusual photograph of the Soviets in that you don't often see this kind of formation in replenishment at sea. The 25,000-ton *Berezina* class AOR, and the *Kiev,* and the *Zechina* down below, overall the Soviets still do refuel bow to stern, they still do refuel in quiet wateways, but increasingly we see them replenishing and refueling underway, side to side, and at fairly high speeds, and that has been a development that has been coming on in recent years. In years past that was almost never the case. And that kind of proficiency is what is helping them to maintain their forces deployed.

There was a lot of interest in the Soviet surveillance of the Falklands, and did the Soviets or did they not provide any information to the Argentinians? [Deleted.] They did have fishing ships down in the vicinity which they were reporting regularly. They had an intelligence collector off Ascension Island. They had satellites in orbit. [Deleted] and they flew their Bears, the Bear Delta reconnaissance out of Luanda. [Deleted.]

Senator WILSON. Why do you think that is the case?

Admiral **Butts**. I think they felt they could gather information they needed by the available sources they had. That is a long way for a submarine to go.

Also, based on the activity down there, it would have been a hazardous place for a submarine to operate.

SPACE ACTIVITY

On the subject of space activity, the Soviets really don't have a civilian space program like we do. Every aspect of their space program has a military aspect, and last year was their highest level ever, 107 launches overall, and from the navy point of view, the interesting thing was the [deleted].

Senator **Cohen**. How many launches do we conduct each year?

Admiral **Baggett**. What was that?

Admiral **Butts**. I will have to get that for the record.

I think it was around 30 or thereabouts.

[The information follows:]

U.S. SPACE LAUNCHES

In 1982, a representative year, the United States conducted 18 space launches. Three of those were space shuttle launches.

Senator **Cohen**. What is impressive is their capacity and willingness to launch a satellite with no regards to the cost. You know, they can just launch them and launch them, like they are putting balloons up.

Admiral **Butts**. Indeed they do.

Here is another area that was of interest this past year. [Deleted.]

Senator **Cohen**. What are they putting it on?

Admiral **Butts**. Modified [deleted].

One of the things that also attracted our attention this past year is the Soviet activity in and around the Arctic. Of course, they live there, their submarine bases. Most people think of the Arctic as this kind of a place, but in actual fact, much of the high Arctic is relatively, I say relatively smooth, with no more than about 2 meters of ice over much of it, even in the dead of winter, and so surfacing through the ice is a practical thing to consider. We have done it and the Soviets have done it.

The engineers have [deleted].

In another part of the world, this is a Chinese SSBN which also attracted our attention this past year. The Chinese launched their first ballistic missile from a modified Golf. It flew [deleted] miles. We think this is the ultimate platform intended for that.

TECHNOLOGY TRANSFER

An area that I wanted to mention specifically is technology transfer. The Congress and many others have called the attention of the American public to this problem. Mr. Brezhnev himself noted specifically that they will do everything possible, and it is not generally understood, but most of what the Soviets get from us they do not get from espionage; they get from open sources, and we think they are going to continue to use our technology and theirs to exploit in years ahead.

I would like to show you some specific examples. This is a series of microcircuits, U.S. circuits on top and the Soviet equivalents below. They are pin-by-pin copies of Texas Instruments and RCA. These are [deleted].

We have a small facility out at Chesapeake Beach just south of here which exploits foreign material, and when they are working on these, the Soviet component breaks down, they simply substitute U.S. equipment.

One of our officers at the Naval Intelligence Support Center [deleted].

Senator LEVIN. Is that actually a [deleted].

Admiral BUTTS. Yes, sir, that is an [deleted].

Senator LEVIN. They think they lost it?

Admiral BUTTS. We picked [deleted].

Senator LEVIN. Part of that is supplied openly, than? You are talking about technology. What you are talking about here is that they are just copying ours by picking up a copy. We are not selling them components, are we?

Admiral BUTTS. No, sir.

The Soviets would not use them if we sold them to them. They insist that their engineers have the capability to duplicate what they mine in the west and put into production and make it themselves. They do not want to be dependent.

Senator COHEN. One of the things we heard last year was that by copying or taking this technology, they don't build an industrial base to actually manufacture it themselves. Rather, they are somewhat limited because they are only copying U.S. parts.

Is that true?

Admiral BUTTS. I don't really agree with that, sir. I think that clearly everything I see says that before they put anything into production that they have borrowed from us, they in fact have the capability to manufacture it themselves. They are not simply taking our components and building things with them. They are using the benefit of our research and development to pick out the things that they know will work.

Admiral BAGGETT. Probably the biggest thing they get out of open literature is concepts. We spend a lot of 6.1 and 6.2 moneys weighing alternatives and concepts. Once we go into 6.3, engineering development, and it becomes public knowledge and in open literature as to what conceptual route we are taking for engineering development, that enables them to really put the efforts of their engineers on engineering developments or concepts that they have confidence in because we have opted for that concept. So their engineers and physicists, the same type of high technology people that we have in 6.1 and 6.2, they can have working on limited numbers of concepts that have already been proven over here in the United States, ones that we have opted for.

Admiral BUTTS. Admiral Watkins describes this whole thing as like being in a tail chase with ourselves. They are about 2 years behind us at this point in time.

I mentioned this was the new Blackjack and the B-1. This is just a slightly larger version of the B-1. Also, I might point out that the Soviet [deleted] looks very much like ours. They are adapting many of the things that we are doing.

And the last thought I wanted to leave you with, sir, was this, that we do not see any slowing down. We see slight changes in direction in some of their ship programs, but we see larger, more capable ships coming along to replace the ones that are going out of the inventory.

U.S. CAPABILITY VERSUS SOVIET CAPABILITY

Senator **COHEN**. How would you assess our capability versus the Soviet naval capability?

Admiral **BUTTS**. I would assess ours as the greater, as we understand.

I would much rather have ours than theirs.

Senator **COHEN**. For what reason? Tell me.

Admiral **BUTTS**. I think based on the operational proficiency of our people overall.

Senator **COHEN**. That doesn't talk about their ships. I want to talk in terms of their equipment.

Admiral **BUTTS**. On the submarine force, I can make an easy comparison there, that the best of our attack submarines are substantially better than the best of theirs. Their SSBN's are probably, with the Typhoon, getting to be on par with ours in terms of [deleted].

Senator **COHEN**. What is the speed? What advantage does it give them, in speed and depth, over the *Trident*?

Admiral **BUTTS**. As far as their Typhoon? Speed with an SSBN is—unless you are going to make an SSBN which really has a capability to outrun an SSN, speed really isn't a major factor. You need enough speed to maneuver away from surface action groups and you need enough speed to get away from merchant shipping and those kinds of things, but you really do not need high speed. What you need is silence, and *Trident,* of course, is the quietest submarine in the world. We have been very successful in that regard.

Admiral **BAGGETT**. I will answer the general question. I would prefer to have the U.S. Navy simply because, aside from the submarine issue, and we do have a better submarine force qualitatively than they do, the biggest thing we have other than the submarine advantage over the Soviets is the ability to put sea-based aviation at sea. I think that is the biggest factor right now.

We very often talk about escorts and Aegis cruisers and all of the surface combatants that are attendant upon a carrier. And I often hear about ships that defend a carrier, and that is just an anathema to me. I am not an aviator. I am a surface warfare officer.

We operate our surface ships under an air umbrella. The carrier is really the keystone for power projection, and we are not in the defensive business. We are really controlling an area of the surface of the earth and the carrier is the main piece of that, and to talk about defense of the carrier I think is telling it falsely. It is incorrect to say the carrier requires all these other ships to protect it. It doesn't. The carrier protects them in any reasonable scenario that I can think of. The carrier is the keystone offensive player, and the other ships operate within that umbrella. So the carrier airwing, the sea-based air we have I think is the biggest determinant and why I would say I would come down very strongly on preferring the U.S. Navy.

Senator **Cohen**. There was a lot of speculation in recent weeks and months that perhaps we should move to land-based air as far as our Navy is concerned.

BACKFIRE CAPABILITY

What about the capability of the Soviet Backfire, what that can do for their navy against ours?

Admiral **Baggett**. [deleted.] That is not what we design carriers and carrier battle groups to do. We really have a maritime strategy that shows that there is a payoff in having a number of carrier battle groups operating together in mutual support. [deleted.]

Senator **Cohen**. Suppose you had to go to Iran or somewhere in the Persian Gulf? What would happen there, with the Soviets, perhaps, launching Backfires from Afghanistan?

Admiral **Baggett**. [deleted.]

There is a breakpoint of [deleted].

If I could, Mr. Chairman, I have a few minutes left, and I would like to just continue on Admiral Butts' presentation.

Senator **Levin**. Could we ask a question?

Senator **Cohen**. One other question before we go to that.

How would the AWACS that the Saudis have, operated by us, plus the tactical airpower in Turkey, help out in a scenario such as that?

Admiral **Baggett**. It would help very much. [Deleted].

Senator **Cohen**. What about the tactical airpower?

Admiral **Baggett**. TACAIR the same way. We count on TACAIR—when I talk about carrier battle groups, I am not really talking about the sea-based air in a given locale. I am really talking about tactical aviation in a given locale, and that tactical aviation can be provided by U.S. Air Force tactical aviation, with the infrastructure necessary to support it, or it could be naval aviation. We have, as you know, a memorandum of agreement between the Navy and the Air Force. This is not a new thing. General Gabriel and Admiral Watkins have recently signed a memorandum of agreement to continue to work together in a more intensive training environment. We are operating more with the AWACS aircraft, with TACAIR from the Air Force than we ever have, including controlling tactical operations of the Air Force out of England during fleet exercises in the North Atlantic, for example, last fall. We are doing that more than in just routine fleet operations.

Senator **Cohen**. Well, I find it interesting that you have to have an MOU between the Air Force and the Navy when the Secretary of Defense has said that we don't need one for between Israel and the United States.

Admiral **Baggett**. I think the MOA is really a continuing one.

Senator **Cohen**. Senator Levin?

Senator **Levin**. I have a couple of questions following your questions.

Is this an appropriate time to ask them? These are for Admiral Butts.

SOVIET NAVAL GROWTH

I wonder if you could get the last chart up there, that last statement about the growth of the Soviet Navy.

Do you think you might be able to declassify that for us?

I am curious. Why would that be classified?

Admiral BUTTS. Those words, word for word, are from an national intelligence estimate, but the overall thought can certainly be declassified.

Senator COHEN. You indicated that you wouldn't swap our Navy for theirs. Putting aside the quality of our personnel, just in terms of the capabilities and the equipment, the quality, the quantity, putting all of that together, would you swap?

Admiral BUTTS. No, sir, again, largely because of the carriers which Admiral Baggett mentioned, plus the overall known quality of American equipment and the ununiform quality of the Soviets.

Senator LEVIN. What about in antisubmarine warfare ASW? Are we ahead in ASW?

Admiral BUTTS. Yes, sir, substantially.

Senator LEVIN. What about amphibious ship lift capability? Are we ahead in lift capability, do you know?

Admiral BUTTS. Overall, our amphibious lift capability is still larger than the Soviets but that is a part of their force that they have increased substantially in the last few years.

Senator LEVIN. Are we still ahead of them?

Admiral BUTTS. Yes, sir.

Senator LEVIN. How about endurance, fleet endurance in the open ocean? How are we on that?

Admiral BUTTS. That, of course, is an area in which we excel because that is the way we operate.

The Soviets do not stress their op tempo the way we do.

Senator LEVIN. Some of our friends keep putting ads in the paper saying that the Soviets have 2,200 ships, and that we have 500 ships. You are telling us that you wouldn't swap our capability for their capability?

What is going on here?

Admiral BUTTS. The Soviets have a lot of ships. They are becoming an increasingly capable navy.

The point I stressed a few moments ago that along with the technological advances, the thing that doesn't get paid much attention to is operational proficiency. I am concerned that with that many kinds of things, you, the U.S. Government, and I, are going to run out of U.S. Navy ships available to be in the right place at the right time.

Senator LEVIN. You are saying even though we are told by this particular shipyard that the Soviets have four times as many ships as we do—we are told that every week—you are telling us that you wouldn't swap our Navy for those, putting aside personnel, training, conditions, you wouldn't swap our capability?

Admiral BUTTS. I wouldn't swap our capability, but I am saying that I am concerned about a navy that large, and I am also concerned about the continued use of that navy.

Admiral BAGGETT. I would certainly like to swap our responsibilities for theirs in terms of what our commitments are worldwide.

Senator Levin. You wouldn't want to swap our navies.

Admiral Baggett. No, sir, I wouldn't want to swap our Navy. I would like to see our Navy more closely match our commitments.

Senator Levin. In terms of the decade of the 1970's, do you know how much tonnage we and our allies added to our fleet compared to how much the Soviets and their allies added and who added more?

Admiral Butts. I do not have those figures available off the top of my head, sir. I will provide that for the record.

[The information follows:]

WARSHIP PRODUCTION, 1970–79 AND 1980–82

Between 1970 and 1979 the U.S. produced 105 combatant ships and submarines displacing 739,010 tons, while the Soviets produced significantly more: 203 ships displacing 1,092,805 tons. U.S. allies (NATO and three Pacific allies: Japan, Australia and New Zealand) produced 162 combatants displacing 430,079 tons, while non-Soviet Warsaw Pact countries produced 11 displacing 13,700 tons. It should be noted that between 1970–79 our allies built no ships of the types that form the backbone of naval battle forces (carriers and cruisers), and they built only a handful of nuclear submarines. Including amphibious ships, underway replenishment ships and large tenders, the U.S. and its allies produced 341 ships, while the Soviets and their allies produced 308.

Navy figures comparable to those provided to Senator Levin by the Congressional Research Service are provided below for the record. The Navy figures are based on full-load instead of standard tonnages, and they group ships according to DIA categories. Two sets of totals are provided, one for combatants and one for combatants plus amphibious ships, underway replenishment ships and large tenders. (The last three types are sufficiently dissimilar in configuration from combatants that full-load tonnage totals combining the four types are misleading). Following the figures for 1970–79, a similar set of figures is given for 1980–82.

These figures do not include a significant part of the Soviet Navy for which the U.S. Navy has no counterpart: a large force of patrol ships and craft, mine warfare ships and craft, landing craft, and miscellaneous auxiliaries. The Soviet Navy built 579 ships in these categories between 1970–79, while the U.S. Navy built only 11.

United States, Allied, and Soviet Naval Ship Construction, 1970–79

[Number/tons]

Multipurpose aircraft carrier (CVN):	
USA	2/182,800
NATO	
PAC	
USSR	
Cruisers (CG/CGN):	
USA	5/53,300
NATO	
PAC	
USSR	[Deleted]
Frigates (FF/FFG):	
USA	43/175,310
NATO	32/98,572
PAC	7/19,240
USSR	[Deleted]
VSTOL aircraft carrier (CVH):	
USA	
NATO	
PAC	
USSR	[Deleted]
Destroyers (DD/DDG):	
USA	25/195,000
NATO	25/121,964
PAC	5/26,700
USSR	[Deleted]

Corvettes (FFL):	
USA	
NATO	20/26,844
PAC	11/19,800
USSR	[Deleted]
Ballistic missile submarines (SSBN):	
USA	
NATO	4/30,000
PAC	
USSR	[Deleted]
Diesel attack submarines (SS):	
USA	
NATO	41/35,749
PAC	9/17,010
USSR	[Deleted]
Auxiliary ships: underway replenishment:	
USA	13/383,600
NATO	13/205/280
PAC	1/5,000
USSR	[Deleted]
Total combatants 1970–79:	
USA	105/739,010
NATO	130/347,329
PAC	32/82,750
USSR	214/1,106,505
Nuclear attack submarines (SSN, SSGN):	
USA	30/132,600
NATO	8/34,200
PAC	
USSR	[Deleted]
Amphibious ships:	
USA	35/524,236
NATO	2/2,818
PAC	6/10,580
USSR	[Deleted]
Auxiliary ships: material support:	
USA	3/68,256
NATO	1/10,250
PAC	
USSR	[Deleted]
Total number of ships:	
USA	156
NATO	146
PAC	39
USSR	308

United States, Allied, and Soviet Naval Ship Construction, 1980–82

[Number/tons]

Multipurpose aircraft carrier (CVN):	
USA	1/91,400
NATO	
PAC	
USSR	
Cruisers (CG/CGN):	
USA	1/11,000
NATO	
PAC	
USSR	[Deleted]
Frigates (FF/FFG):	
USA	22/79,310
NATO	14/51,365
PAC	3/10,910
USSR	[Deleted]
V/STOL aircraft carrier (CVH):	
USA	
NATO	2/39,620
PAC	

USSR	[Deleted]
Destroyers (DD/DDG):	
USA	9/72,200
NATO	6/24,740
PAC	2/13,600
USSR	[Deleted]
Corvettes (FFL):	
USA	
NATO	12/16,298
PAC	1/1,290
USSR	[Deleted]
Ballistic missile submarines (SSBN):	
USA	2/33,200
NATO	1/7,500
PAC	
USSR	[Deleted]
Diesel attack submarines (SS):	
USA	
NATO	6/8,024
PAC	3/5,550
USSR	[Deleted]
Auxiliary ships: underway replenishment:	
USA	4/110,000
NATO	2/35,600
PAC	
USSR	[Deleted]
Total combatants 1980–82:	
USA	46/353,110
NATO	43/153,982
PAC	9/31,350
USSR	60/305,120
Nuclear attack submarines (SSN, SSGN):	
USA	11/66,000
NATO	2/6,435
PAC	
USSR	[Deleted]
Amphibious ships:	
USA	1/39,300
NATO	1/1,600
PAC	1/5,800
USSR	[Deleted]
Auxiliary ships: material support:	
USA	5/114,400
NATO	
PAC	
USSR	[Deleted]
Total number of ships:	
USA	56
NATO	46
PAC	10
USSR	67

Senator LEVIN. Do you know offhand who built more tonnage in the 1970's?

Admiral BUTTS. Tonnagewise, I would think that probably the United States and its allies did more.

Senator LEVIN. That was the "decade of neglect" that you have been told about, right?

How about surface combatants? Do you know who added more surface combatants during the 1970's?

Admiral BUTTS. Yes, sir. We added more surface combatants.

Senator LEVIN. Carriers?

Admiral BUTTS. We added more carriers. The Soviets put their money in the 1970's into submarines.

Senator LEVIN. We had already put our money into subs, right?

Admiral BUTTS. The point I made earlier, the Soviets did not launch the first of their *Yankee* class until a month after we had launched the last of our Poseidon missiles.

Senator LEVIN. If you could give us those figures for the record on the tonnage, it would be helpful to us. The figures I get are that we added more naval tonnage than they did in the 1970's. The numbers of ships added are actually pretty close. They have a few more ships, but we are way ahead in tonnage.

Admiral BUTTS. But increasingly, the Soviets have turned from the smaller ships that they had in years past to the larger, more capable ships that they are building now.

Senator LEVIN. I am just talking about the 1970's, the decade of neglect that we are told about all the time.

That is kind of a strange way to describe it. I am not asking for an answer. It just seems to me if we acquired more tonnage and almost as many ships in the 1970's, and we acquired more surface combatants, and more carriers—while they acquired more of the smaller, nonopen ocean vessels—it is rather a strange way to describe a decade. I am not saying there are not areas where we want more capability, and I'm not arguing with you about the Soviets increasing their capability. Obviously there are areas in which we want more capability, and obviously they are increasing their capabilities. We shouldn't be standing still.

But that description of a decade in which we outbuilt them tonnagewise and in numbers of platforms in the major critical areas I think is a very inapt description, and it is one of the reasons I can speak outloud—and this has nothing to do with your presentation—why I think the American people are not believing what they hear anymore, and I just say that because I think it is important that we get a balanced view.

Your purpose here this morning is not to give us a balanced view. I understand that. You are telling us what their capabilities are. You are not here to show us in each instance their capability versus our capability, so I am not going to berate you for that. But I must say that in general I think the image that has been attempted to be portrayed by the Secretary of the Navy is inaccurate and ultimately strains credibility and ultimately loses credibility, and I say that because I believe it, not because it is particularly relevant to the proceedings this morning.

And you know, again, I don't think these ads are helpful. They don't help me. You tell me we have got a stronger Navy than they have got. We have got weaknesses and we have got to improve it and all the rest. This ad tells me every week they have got five times or four times as strong a navy than we have got. That is what it is trying to tell the public.

I don't know who pays for these ads. You don't happen to know who pays for them, do you?

Admiral BUTTS. No, sir, I do not.

Senator LEVIN. Whether it is taxpayers or whether it comes out of the profits of the organization.

Mr. Chairman, I have a number of questions that are more relevant to the proceeding, and I don't want to interrupt their flow, so maybe we ought to let me terminate there and I will come back, or else I will file them for the record.

STATEMENT OF VICE ADM. LEE BAGGETT, USN, DIRECTOR, NAVAL WARFARE

Admiral BAGGETT. Mr. Chairman, I just have a brief presentation, and hopefully it will prompt some questions.

I don't have a prepared statement for the record.

As the Director of Naval Warfare, my job is to look at requirements, to identify requirements of the U.S. Navy and be the officer primarily responsible for fleet readiness and training, battle group readiness across the board.

WARFARE TASKS

Primary

Strike and antiship warfare.
Antiair warfare.
Antisubmarine warfare.
Amphibious warfare.
Mine warfare.

Ancillary

Electronic warfare.
Cover and deception.
Tactical intelligence support.
Command and control.
Surveillance.

Warfare tasks, this morning I will cover it a little bit in depth, include antiair warfare and antisubmarine warfare. I won't go into details with respect to amphibious warfare, mine warfare or strike warfare, or the ancillary electronic warfare covered in this section, those elements that cover cross-warfare areas, if you will.

DIRECTOR, NAVAL WARFARE RESPONSIBILITIES

Warfare task sponsorship: Articulate warfare task elements; develop warfare task requirements; develop warfare task program guidance; maintain warfare task master plans.
Force level plans.
Resource allocation proposals: Among warfare tasks; within warfare tasks.
Assessment.
Battle force readiness.
Tactical training, development and documentation.

Just a quick look at maritime strategy, in the context of what is the Navy's maritime strategy and how does it match up with national strategy. This slide—[slide deleted]—shows two fundamental things, the symmetry between the Atlantic and the Pacific, and that comes about just because of the location of the Soviets. [Deleted.] We now have 13 carrier battle groups, actually 11 carriers which are deployable at any one time with *Kitty Hawk* being in overhaul right now on the west coast, and *Forrestal* being in a service life extension program in Philadelphia today.

We have 11 carriers that are deployable in a relatively short time.

Senator COHEN. How many are actually deployed at any one time?

Admiral **Baggett**. Actually, at any one time, we have *Midway* and one other carrier in the Pacific deployed; we have generally one or two in the Mediterranean, depending on whether one is in the Indian Ocean or not. So we have four deployed at any one given time.

ANTISUBMARINE WARFARE

Antisubmarine warfare is really denying the enemy the effective use of his submarines, not going out and looking for submarines, per se, but denying him effective use of his submarines.

We have touched briefly this morning on the quieting trend. [Deleted.]

[Slide deleted.]

SOVIET NUCLEAR SUBMARINE CLASSES

This shows just briefly a summary in blue, the nuclear submarine classes that the Soviets have introduced, going back to 1960. In brown are the diesel electric classes, the *Kilo,* the *Tango,* the *Juliet,* and the *Foxtrot* that have come into the inventory in the last 20 years for the Soviets.

The next slide shows those cruise missiles and ballistic missiles above the line, just to give you a feel numerically as to the five classes of ballistic missiles; and the eight cruise missile variants that have come in over that period of time in the Soviet submarine inventory.

[Slide deleted.]

Front line Soviet submarines showing numbers, total numbers, 270-odd the numbers that we build versus the numbers they build per year. We have still got a baseline, a starting point and a point of departure. They build and they continue to keep an inventory almost three times the inventory that we have for front line submarines.

[Slide deleted.]

This is really a slide that just shows basically how the U.S. ASW forces numerically are compared to the Soviets, and these numbers represent surface ships, P–3 and S–3 aircraft and helicopters on a platform-to-platform basis. We have [deleted] platforms per Soviet submarine in the inventory. At the end of World War II the ratio, just for comparison, was 100 to 1. We had 100 antisubmarine warfare platforms for every German submarine that was in action.

The counterpart of that shows our submarine force levels, 125 total, counting the SSBN force, matched against the Soviet antisubmarine warfare forces.

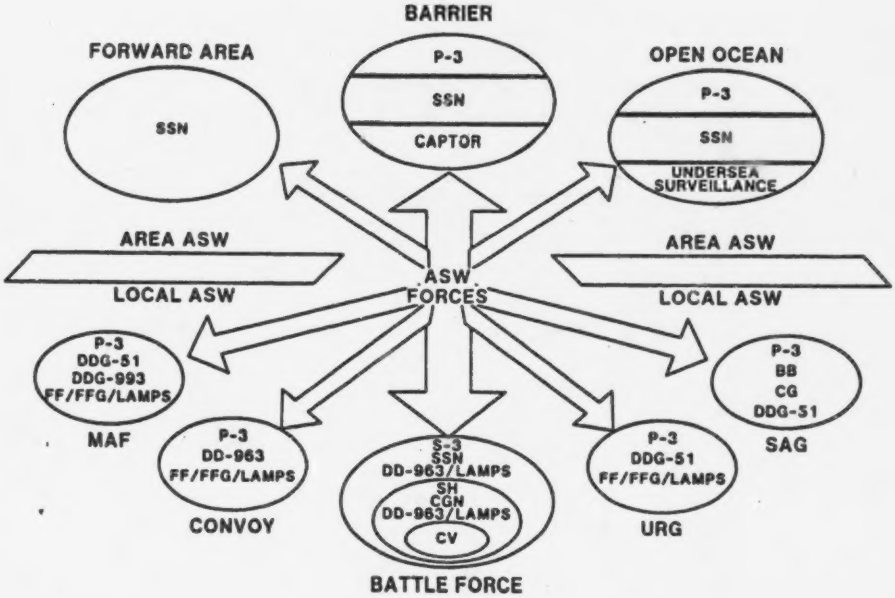
We talked earlier today about the Soviet noise trends, the quieting trends. [Deleted].

[Slide deleted.]

This shows, for example, [deleted].

Senator **Levin**. Will you be showing us any changes in our own ASW capability? Is that part of your presentation?

Admiral **Baggett**. I will. I will allude to it. I won't show you quantification.


BARRIER
P-3
SSN
CAPTOR
FORWARD AREA
SSN
OPEN OCEAN
P-3
SSN
UNDERSEA SURVEILLANCE
AREA ASW
LOCAL ASW
AREA ASW
LOCAL ASW
ASW FORCES
P-3
DDG-51
DDG-993
FF/FFG/LAMPS
MAF
P-3
DD-963
FF/FFG/LAMPS
CONVOY
S-3
SSN
DD-963/LAMPS
SH
CGN
DD-963/LAMPS
CV
BATTLE FORCE
P-3
DDG-51
FF/FFG/LAMPS
URG
P-3
BB
CG
DDG-51
SAG

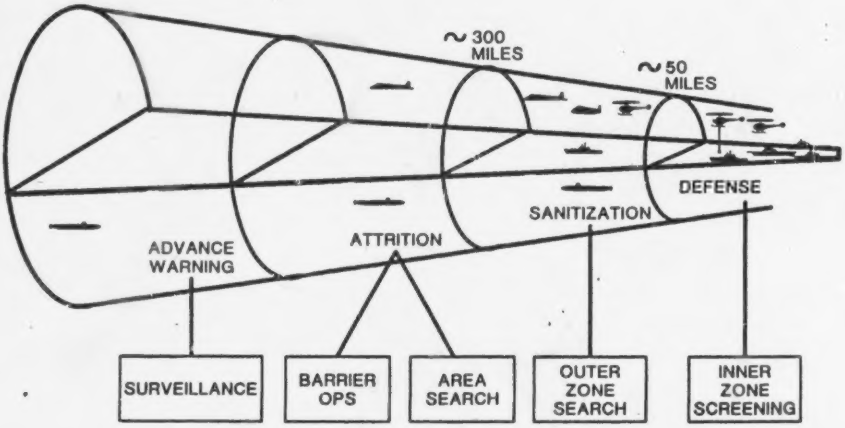
This really shows antisubmarine forces that we have, the nuclear submarines operating in the forward area, the P-3's, nuclear submarines operating in barriers together with captor mines in the open ocean areas, the Orion aircraft, the P-3's, again the SSN's which are a major player in all the antisubmarine warfare scenarios, and finally, undersea surveillance, the [deleted].

These forces here show the integral ASW forces in the battle force, underway replenishments, group surface, action groups, convoys.

We are really talking about antisubmarine warfare that uses defense in depth, from surveillance leading all the way through barrier operations, area search, inner zone screening. In a geographical context it involves antisubmarine warfare, [deleted].

Finally, the close-in ASW involved with surface action groups, marine amphibious forces, underway replenishment groups.

ASW DEFENSE IN DEPTH CONCEPT



And this is antisubmarine warfare in depth, which is really to give an indication of where the VP operates, [deleted] and closer in, the destroyer types, the LAMPS helicopter. On a geographic scale, to just get you out of a mind set—if anyone has a mind set that sees a bullseye with the carrier in the center—I want to give you some appreciation for the span of ocean control I am talking about, and that is the keyword, rather than defense, it is control of the oceans, with a carrier fixed here at Washington, it would spread all the way down into Delaware, down to Roanoke, the western reaches of Pennsylvania. That is the expanse of control that a carrier battle group would have. And those are typical positions where you would find patrolling aircraft [deleted] submarines here, surface towed array ships in that area.

[Deleted.]

The bases from which their submarines operate are shown there, outside of the Soviet Union.

ASW Becoming Increasingly Difficult

Soviet trends

Harder to find—detection and classification.
Harder to kill—localization and attack.
More lethal—damage to U.S. forces.

That really tells the story that I think you have heard today, the [deleted] torpedoes they are developing, the cruise missile capabilities. They are getting harder to kill [deleted].

As far as our limitations, first and foremost are the [deleted].

Antiair Warfare

The destruction of enemy air platforms and airborne weapons, whether launched from air, surface, submarine, or land platforms.

In the time remaining I would like to just run through briefly the counterpart to antisubmarine warfare which is almost a mirror image, and that is antiair warfare. It is a mirror image in the context of defense in depth or operations in depth.

Issue: AAW Capability

Elements

- Offensive AAW.
- CVBG outer air battle.
- Area defense.
- Point defense systems.

Here again, offensive AAW, the carrier battle group, outer air battle, close-in area defense with standard missiles and the F-14 aircraft.

Each of these is a 100-mile-range ring, and it shows the span the carrier battle group would have in the South Atlantic with respect to the Falkland Islands. That is just a depiction. In the Falkland Islands air defense in depth was lacking on the part of the British—the British Harrier aircraft were typically stationed on combat air patrol within 100 miles of those positions that they were going to protect. Our combat air patrol stations using F-14's are typically out at ranges of [deleted] miles. Here is aircraft early warning, [slide deleted] the surveillance, the British had no counterpart to the E-2C. The British did not have an area defense capability that was based on sea-based air.

[Deleted.]

I would only point out here, [deleted] in each generation, and as Admiral Butts said, they don't throw anything away. They just pass it on to third countries.

Our concept of what we will see in terms of [deleted].

[Slide deleted.]

This really is just a scene that depicts AAW defense in depth, [deleted].

[Slide deleted.]

That is simply a depiction of the outer defense zone with our combat air patrol stations out at [deleted] miles, and the early warning aircraft at [deleted] miles. [Deleted.]

[Slide deleted.]

This gives an engagement envelope timeline for what we now have for current systems for a surface-to-air missile engagement sequence. Right now from detection to firing, we are seeing engagement times of [deleted]. With the SM-2 and the cruisers we are cutting that down by factors of [deleted]. With the new threat upgrade, the cruisers with the standard missile block 2, [deleted].

Here you can see the Aegis engagement sequence. [Deleted.]

Our point defense installations, the only point I want to make here is that [deleted] the close-in weapons systems installations. If someone asks what were the lessons learned in the Falkland Islands, I would say the criticality of having close-in point defense systems, because [deleted].

Admiral Butts talked about the [deleted]. What I have tried to depict here are our capabilities with a NATO Seasparrow missile system, basic point defense missile system, the newer version of those two systems, the close-in weapons systems, Volcan Phalanx, and shown here, for example, are [deleted].

Indicated, as we discussed earlier, [deleted].

Just comparing the [deleted].

The ship lost her fire main, lost its lighting, lost its ventilation. It was abandoned in 3 hours and sunk some 6 days later.

Senator WILSON. You said it was steel-hulled?

Admiral BUTTS. Yes, sir.

Senator WILSON. I saw reports that said it was aluminum.

Admiral BAGGETT. No, sir, steel superstructure. [Deleted.] *Sheffield* had a steel superstructure.

[Deleted.] What we do have is better redundancy, better firefighting system. We have a loop fire main system, for example, that gives us an ability to isolate damage. We have redundant secondary firefighting capabilities forward and aft in that system, and in short, all our studies indicate we would not have lost the ship.

Strengths and weaknesses in antiair warfare; our long range interceptor capability, airborne early warning capability we have, the fact that we are developing and looking for contributions from nonorganic surveillance aircraft such as the AWACS aircraft, nonorganic Tacair such as U.S. Air Force aircraft. We still have the biggest limitation, as indicated there, [deleted] because our requirements have continued to grow for threat weapons, but the funding has been basically level over the past years. [Deleted.]

That really is a very quick summary of antisubmarine warfare. I tried to touch a little bit on the Falklands and the lessons learned there in the context of antiair warfare.

Senator COHEN. Thank you very much, Admiral.

Senator Levin, do you have questions?

Senator LEVIN. Secretary Lehman said the oceans were becoming more opaque.

Do you agree?

Admiral BAGGETT. I don't know how they can become more opaque.

Senator LEVIN. In terms of antisubmarine warfare.

Admiral BAGGETT. They are as opaque as they can be. They are opaque, as you recall, I think the Secretary had reference to some persons who had said the oceans are becoming transparent, and his statement may have said the oceans are still opaque. I don't think they are becoming more opaque. I certainly agree that they are simply opaque.

Senator LEVIN. You indicated our ASW problems are increasing against theirs.

Admiral BAGGETT. [Deleted] yes, sir.

Senator LEVIN. What about their ASW against us? Are their problems increasing or decreasing?

Admiral BAGGETT. [Deleted.]

Senator LEVIN. I mean their ASW capability against our ships.

Admiral BAGGETT. [Deleted.]

Senator LEVIN. Are they improving their ASW capability faster than we are giving them problems?

Admiral BAGGETT. [Deleted.]

Senator LEVIN. So we are going to have more trouble, you say, finding their subs, and they are going to have less trouble finding their subs.

Admiral BAGGETT. [Deleted.]

Senator LEVIN. What about undersea listening capabilities? This would be for Admiral Butts, or either one of you, I think. I am not sure.

Admiral BUTTS. The geography has not been kind to the Soviet Union, Senator, as regards their ability to deploy what we would describe as a SOSUS system. They have fallen back on short range systems. [Deleted.] That is not the kind of detection capabilities that we have. And again, it is largely a problem of geography and the fact that they didn't get started very early in building [deleted].

Senator LEVIN. This, I think, is also for Admiral Butts.

They have been working hard for what, 20 years now, on ASW capability?

Admiral BUTTS. At least that, yes, sir.

Senator LEVIN. The Soviet Union.

In terms of what they have achieved in terms of time and money for their investment, do you think they have achieved a lot?

Admiral BUTTS. It is difficult to define what is a lot. I think by their expectations, everything I have read, they have not quite achieved what they really thought they would, but I think that realistically they have done maybe more than they really expected on the other hand.

Senator LEVIN. Does their intelligence estimate any dramatic advance or breakthrough in ASW on their part?

Admiral BUTTS. No, sir. As I mentioned earlier, we examined all phenomenology associated with ASW in exhaustive detail, not only for intelligence sources, but also everything we know about our U.S. programs.

Senator LEVIN. Would you agree with this statement that nothing is known which would give credence to any assumption that our SSBN's at sea could be localized and destroyed with any confidence at all?

Admiral BUTTS. That is correct, sir, in the present timeframe and through the rest of this decade, sir.

Senator LEVIN. And would you say for the foreseeable future?

Admiral BUTTS. Yes, sir.

Senator LEVIN. There was a chart there about bombers, bomber penetration. We were using our B-52's for their Backfires. You had that chart up there. [Chart deleted.]

What percentage of the simulated Backfires got through?

Admiral BAGGETT. In that particular case we have typically seen, [deleted].

Senator LEVIN. [Deleted] percent got through. That is of the planes.

Admiral BAGGETT. That's right, [deleted.]

Senator LEVIN. Were they going up against our carriers?

Admiral BAGGETT. They were going up in this case against [deleted].

Senator LEVIN. How many do we have in that [deleted].

Admiral BAGGETT. I will get that number for the record.

[The information follows:]

[The information is classified at a compartmental level.]

Senator LEVIN. What percentage were sunk or hit in that simulated exercise?

Admiral BAGGETT. I will have to get that. The launch range, when they were either intercepted or simulated a launch, that was the end of that phase of that exercise.

Senator LEVIN. So [deleted] percent of them launched?

Admiral BAGGETT. [Deleted] percent of them were able to launch [deleted] in a simulated scenario under that fleet exercise. So now we are at the question of attriting those [deleted] as they come in through the area defense to the point defense modes.

Senator LEVIN. We don't have the answer to that.

Admiral BAGGETT. I will have that for the record, and what I have from simulations, Senator. I don't have that particular exercise detail with me this morning.

Admiral BUTTS. Sir, at higher classification I can tell you precisely [deleted].

Senator LEVIN. Maybe you can give us those results, then, for the record, if you would.

[The information follows:]

BATTLE CASUALTIES

The information requested is classified at a compartmented level.

Senator LEVIN. How many, [deleted] able to penetrate to missile launch range?

Admiral BAGGETT. [Deleted.]

Senator LEVIN. Thank you, Mr. Chairman.

Senator COHEN. Senator Wilson?

Senator WILSON. Admiral Baggett, in light of the overall threat, what would you say is the most urgent need that we have?

Admiral BAGGETT. Right now the most critical thing I think we have is the sustainability and readiness factors that we are concerned with in the fleet. Today it is the No. 1 item; to enable us to fight with what we have to a greater degree, and [deleted] is the No. 1 item I am thinking of specifically, second is the building program. We have forces that will replace those forces that are aging in the fleet over the next 10 years. Those would be the two major concerns, force levels and sustainability.

In terms of ASW or AAW, that is a very difficult question. Antisubmarine warfare starts at the sea basically, and the Soviet submarine threat could be anywhere. We can draw arcs on charts to determine how far out the Backfires go, but I don't have any arcs I can draw to determine how far out the submarines can go.

Senator WILSON. Is there anything in particular you think that we are not doing that we should be?

You have spoken generally. When Senator Levin asked the question about matching their navy and our Navy, you said that you wouldn't trade but you wished that we had resources that would more closely match our commitments.

What specific ordnance? What specific things do you think we need to improve the sustainability?

Admiral BAGGETT. I think that the budget that we have had in recent years, the one that the President submitted, gives us programmatic levels we need between now and 1990 to have a capability. It is a steadily increasing capability in terms of ordnance, shiploads, and sustainability. Force levels that we have right now in the budget and FYDP would get us to a 600-ship Navy. It would enable us to more closely meet the commitments we have without having to worry, as we do now, about tradeoffs. Will we deploy carrier battle groups to the Indian Ocean first, or will we pose a threat to the Soviet homeland in the Northern Pacific first? Will we deploy carrier battle groups to the North Atlantic or will we worry about the Mediterranean first?

So right now the force levels that we have embark us on a maritime strategy, based on those force levels, that calls for prioritization in sequential operations. And additional force levels would give us a greater capability to meet our commitments simultaneously.

Senator WILSON. Do you think that the maritime aspect as opposed to the air aspect is in better shape in terms of the budgeting to get from 400 to 600?

Admiral BAGGETT. Yes, I think the program we have submitted in the fiscal 1984 budget will get us to a 600-ship Navy by the year 1990, and I mean a 600-ship Navy with the capabilities that we need to sail where we need to sail.

Senator WILSON. My impression, just from the hour that I spent in the Tactical Subcommittee hearing makes me think that that is true, that from a maritime standpoint we are in better shape, and we seem to be sort of piecemealing the air side, that we are running a number of production lines.

Chairman Goldwater was concerned that we are looking at something like six aircraft a year and several of the weapons systems, which doesn't seem to be a very efficient way to go about it, and it seems to me that we are not facing that same situation here.

Admiral **BAGGETT**. What we are facing here are shipbuilding programs that are well structured. Really, the number of aircraft we have in naval aviation is inadequate. The past procurement practices we have, I think we recognize the fact that we have too many limited procurement buys, if you will, for naval aviation.

Senator **COHEN**. Would you like to go into a higher, codeword briefing and present any further evidence to us?

Admiral **BUTTS**. Nothing unless you would like some additional information, sir, either on Senator Levin's question or on your question as regards the Typhoon.

Senator **COHEN**. Perhaps you could submit those for the record. Carl, do you have anything else?

Senator **LEVIN**. Just a couple more questions.

[Deleted] recently, the Soviets' capabilities for sustained combat—and I am talking about the Navy—are limited, although improving.

Is that something you would agree with?

Admiral **BUTTS**. Yes, sir.

For sustained combat, that is for periods of, say, in excess of 90 days.

SHIP ACQUISITIONS

Senator **LEVIN**. I am going to read you some figures in terms of ship acquisitions, and if these are different from what your understanding is, perhaps you could let us know, or if you don't have them in your mind, perhaps you could supply them for the record. This is during the 1970's, naval acquisitions by us and by the Soviet Union.

Surface combatants, 3,000 to 5,500 tons, and here I am talking about we, and then our NATO allies, and then the Soviets. We acquired 43—these are frigates, mainly—43, the Soviets 21.

Does that sound about right?

Admiral **BUTTS**. About two to one, yes, sir, on frigates.

Senator **LEVIN**. And our NATO allies, 32 to the Soviets same 21 figure? Are you familiar with the NATO acquisition?

Admiral **BUTTS**. No, sir, not specifically.

Senator **LEVIN**. Well, let me just give you ours.

So frigates, we have two to one in the 1970's.

Now, in the destroyer class, 5,500 to 8,000 tons, we acquired 25 and the Soviets 9.

Does that sound about right?

Admiral **BUTTS**. I don't recall specifically our figures. The Soviet figures I thought were about 12.

Senator **LEVIN**. Perhaps you could give us that for the record.

[The information follows:]

SOVIET SHIPBUILDING

During the 1970's the Soviets produced [deleted] ships of frigate class.

Senator **Levin**. The 8,000 tons and up cruisers, we acquired five, they acquired seven.

Does that sound about right?

Admiral **Butts**. Yes, sir.

Senator **Levin**. Now, small carriers, we acquired five, they didn't acquire any. That is under 30,000 tons.

Admiral **Butts**. That is correct, sir.

Senator **Levin**. Medium carriers, they acquired [deleted] we didn't acquire any.

Admiral **Butts**. In the 1970's, yes, sir.

Senator **Levin**. The large carriers, we acquired two, they didn't acquire any.

Admiral **Butts**. That is correct.

Senator **Levin**. The amphibious ships over 3,000 tons, we acquired 29, they acquired 24.

Admiral **Butts**. That would be about right, yes, sir.

Senator **Levin**. And how about attack subs? Who added more attack subs? Did we add more or did they add more during the 1970's, not the missile subs.

Admiral **Butts**. They added more through the 1970's.

Senator **Levin**. On attack subs?

Admiral **Butts**. Yes.

Senator **Cohen**. What is their rate of production for attack submarines?

Admiral **Butts**. They have been building about three per year.

Senator **Levin**. How many have we been?

Senator **Cohen**. If you would check that figure, I don't believe that is correct.

Admiral **Butts**. This includes SSE's as well as SSN's.

We will get that for the record.

[The information follows:]

SOVIET SUBMARINE PRODUCTION

The Soviets have produced an average of [deleted] attack submarines per year for the past 10 years.

Senator **Levin**. You have got both the diesel?

Admiral **Butts**. Yes, sir, I can give you the exact.

Senator **Levin**. And the SSN's there.

Admiral **Butts**. Yes, sir.

Senator **Levin**. I would have them at six a year together.

Senator **Cohen**. The nuclear attack submarines?

Senator **Levin**. No, no. I have on all the attack submarines, their rate would be at least, in the 1970's their rate would be about six a year.

Does that sound about right?

Admiral **Butts**. In the 1970's they were building, in the aggregate, 1970's, they built 18 submarines, and through 1980, the lowest number in any year, 1976, was 10. That, of course, included SSBN's and included SS as well as SSN's.

Senator **Levin**. My question was excluding SSBN's.

Admiral BUTTS. Then that would be about 9 or 10 submarines per year.

Senator LEVIN. Our figures are on all attack submarines there would be a total of 70 that they produced during the decade.

Does that sound about right?

Admiral BUTTS. I can get the exact figures for you, yes, sir.

Senator LEVIN. And with our allies, we produced 79.

Are you familiar with that figure?

Admiral BUTTS. No, sir, I am not.

Senator LEVIN. Perhaps you could get us that figure for the record.

[The information follows:]

SUBMARINE PRODUCTION

During the 1970-79 timeframe the Soviets produced [deleted] attack submarines while we and our Allies produced [deleted]. The figures do not include ballistic missile submarine production.

Senator LEVIN. The only areas where they outproduced us other than the SSBNs, according to these figures, are in the smaller surface combatants, the patrol type craft that aren't open sea craft, and in the auxiliary.

Admiral BUTTS. Yes, sir. I might also point out that they added substantial numbers to their merchant ships, to their inventory, including roll-on/roll-off ships, and as you know, sir, the Soviet merchant fleet is very much a part of the Soviet navy in terms of its ability to respond to tasking.

Senator LEVIN. Thank you, Mr. Chairman.

Senator COHEN. Admiral, is it fair to say that the Soviets in the 1970's, toward the end of the 1970's, have moved away from simple area defense into a power projection profile?

Admiral BUTTS. They are beginning to move into the power projection profile, Mr. Chairman. They have through the—certainly through the mid-1970's, we were accustomed to seeing the Soviets thinking in terms of the Soviets being about [deleted] from their home base in terms of their offensive punch. Now [deleted] seems to be a more realistic figure, and we are beginning to see the Soviets astride some of the key routes, for example, the build-up at Cam Ranh Bay.

Senator COHEN. It is not only a question of defending their homeland, but are increased efforts being made in the Caribbean? We have an increased threat, I assume, in our own hemisphere now by virtue of submarines and ships that are being docked in Cuba.

Admiral BUTTS. The Soviets provided more military equipment to the Cubans in 1981 than in any year since 1962, and last year, 1982, saw larger deliveries than 1981. So 2 years in a row they topped the record.

Senator COHEN. I am interested in more than just the question of tonnage during the 1970's, as I recall, the British in either 1980 or 1981, when faced with some of the problems that we have here in this country, namely, the tradeoff between domestic and military spending, opted to reduce their navy down to about 51 ships, as I recall.

Is that correct?

Admiral BUTTS. Yes, sir.

Senator **Cohen**. And in fact, they were planning to unload two of their aircraft carriers which they later sent down to the Falklands and were hoping to make up the difference in their ASW capability by aircraft.

Is that something the navy feels——

Admiral **Baggett**. The Royal Navy, Mr. Chairman, have really structured their whole force levels to be operated in areas where they were dependent on land-based support and support from the U.S. Navy. And as you indicated, had the Falkland Islands incident broken in the fall instead of in the spring, the Royal Navy would have been denuded in terms of even having an aircraft capability to go down into the Falklands in the South Atlantic.

MARGIN OF SUPERIORITY

Senator **Cohen**. Admiral, you may recall Admiral Hayward came before this committee in 1981, I believe, and indicated that we had lost the margin of superiority that we had always enjoyed in our Navy vis-a-vis the Soviets, in that in any conflict with the Soviets the outcome would be "muddy," as I recall.

What, in your opinion, led Admiral Hayward to the conclusion that we had lost the margin of superiority at that time?

Admiral **Baggett**. I think he arrived at it over the years as CNO and watching our force levels decline and the Soviet numbers and capabilities and ships, as they were building, evolved to the point that it was no longer a clearcut superior position for our navy, and that is what he meant, sir, both staying power in terms of ship numbers, but I think also the erosion of personnel that he saw at the time that he was the CNO and we had sunk to a level of 21,000 petty officers, E-5 to E-9, shortages in the fleet.

Senator **Cohen**. As a matter of fact, 50 percent of our ships were rated as nonready at that point, as I recall, and basically because of the shortages in manpower.

Admiral **Baggett**. That is correct.

Today we are still about 17,000 E-5 to E-9 petty officers short in the Navy, but we are seeing an increased COR rating, combat operationally ready. Over the last 3 years we have seen not combat ready unit numbers steadily decline, which is driven by the personnel readiness. In every readiness area, personnel have been the determinant in terms of improved combat operations and combat ready rates. Right now, 7 of the 10 classes of ships are at or above the 70 percent combat operationally ready levels.

As I said, that combat operationally ready rate has improved in 1981. It improved again in 1982, and it looks like we are on the way to improving it again this year in fiscal year 1983, and it is driven by personnel and the improvements that we have seen in personnel.

We still have a backlog of overhauls that number some 13 today. That 13 overhaul backlog is principally due to operational commitments, not a lack of funding to do the overhauls, that is operational commitments to keep the ships at sea.

In terms of aircraft readiness, we have come up in terms of mission-capable aircraft from a level of 59 percent mission capable across all Navy and Marine Corps tactical aircraft being mission capable in 1981 to a level in 1982 of 63 percent of the aircraft are mission capable, Navy and Marine Corps. So that is a 4-percent increase in just that time period between 1981 and 1982. And it directly reflects personnel, I think.

LAND-BASED SOVIET AIRCRAFT

Senator COHEN. During much of the 1970's our Navy did not have to really worry seriously about the threat from land-based Soviet aircraft. In other words, the Flogger was not a serious threat to the Navy. During the latter part of the 1970's we saw the emergence of the Backfire which does present a substantial threat to the Navy. Plus we now have the development of, I think you said, the BEAR carrying a cruise missile now?

Admiral BUTTS. AS-4's, yes, sir.

Senator COHEN. And you have the Blackjack which also poses a significant threat to the force.

Admiral BAGGETT. Projected for 1987.

Senator COHEN. So we don't just measure the nature of the threat by how many tons the Soviets put out in terms of their ships versus those of the free world. That is not an accurate assessment of the nature of the threat.

Admiral BAGGETT. Numbers are no more accurate.

Senator COHEN. Numbers or tonnage.

Admiral BAGGETT. Capability is the issue in terms of maritime superiority.

Senator COHEN. What you are saying is there has been a multiplication of the nature and the quality of the threat that we have to face, but that we are measuring up to it nonetheless, due to improvements in personnel and with continued improvement in our own forces.

Is that also a fair assessment?

Admiral BAGGETT. Yes, sir, it is.

Senator COHEN. Would it be your judgment that we have regained a thin margin of superiority?

Admiral BAGGETT. Not in my opinion, Mr. Chairman. I still think it is as much in doubt as it was a year ago.

Senator COHEN. Still too close to call.

Admiral BAGGETT. It is still too close to call.

I am encouraged greatly by one thing, and that is the retention of E-5's through E-9's, and second, the dollars that in recent years, in the last 2 or 3 years, have been put against sustainability and warfighting capability and the ammunition stockpiles and spares lines.

NUCLEAR AND CHEMICAL THREATS

Senator COHEN. We have not talked at all during this briefing about the nuclear threat or the chemical threat in the naval context.

Would you just talk briefly about that? Has this complicated or in any way eroded the margin that used to exist?

Admiral BUTTS. The Soviets have a wide variety of naval weapons, as you are aware, that have nuclear capability, including antisubmarine weapons and antiship weapons, and also certain antiaircraft weapons.

Chemical weapons at sea are something that we have postulated. [Deleted.] Soviet ships themselves are built on the *Citadel* concept. We know, for example, even Soviet merchant ships have washdown facilities and decontamination stations. The Soviets pay a lot of attention to that.

Senator COHEN. Do we have comparable washdown systems?

Admiral BUTTS. No, sir, we do not, not to the same extent that the Soviet kinds of systems.

The Soviets pay an extraordinary amount of attention to chemical warfare throughout their armed forces to the point that I take it as a given that it is a capability that they can use because of the attention they pay to it, because of the practice they put into it, particularly in their ground forces and their air forces. We just make—it is something of a special occasion when our people exercise in gas masks. The Soviets routinely do that sort of thing, and I think you may want to hear some of that from [deleted].

But the Soviets have [deleted] and that maybe would give you the best indication of all of what the Soviets would see as their level of effort, and I can provide that for the record.

Senator COHEN. Why don't you provide that for the record?

[The information follows:]

BACKFIRE BOMBER

The information requested is classified at the compartmented level.

Admiral BAGGETT. I would just add right now, our current chemical capability is vested in some old ordnance. [Deleted.] If we are to have a credible chemical deterrent, we do need an improved chemical warfare capability right now until such happy time as we have a verifiable means of insuring the Soviets are not going to use chemical weapons, Mr. Chairman.

Senator COHEN. Gentlemen, thank you very much. We are going to conclude the hearings.

I have a number of questions I would like to ask for the record, and the items that Senator Levin and I inquired about. Perhaps you could supply them for the record.

[Questions submitted, with answers supplied follows:]

QUESTIONS SUBMITTED BY SENATOR WILLIAM S. COHEN

SOVIET MERCHANT MARINE

Senator COHEN. On the Soviet Merchant Marine, as I understand it, the Soviet Union is pursuing a steady expansion of their merchant marine, despite the depressed world market for shipping.

Why do you think the Soviets are placing such emphasis on expanding their merchant marine fleet?

Would you describe the overall capabilities of the Soviet merchant marine? What are the military aspects of this capability, and why do you think that?

What are the capabilities for military use of the individual ships in their merchant marine? What special features are they building in?

How good are we at monitoring Soviet shipments of military cargo in merchant marine ships?

Would you comment also on their fishing fleet's capabilities to conduct military support operations?

What is the effect of the Soviet merchant marine in peacetime on the world shipping market? Is this detrimental to our national interests, and exactly how and why?

Admiral BUTTS. The Soviets are expanding their merchant marine because of its inherent capability to meet a broad range of political, economic, and military objectives worldwide. In terms of economic capabilities, the merchant marine earns the Soviet Union a substantial amount of foreign hard currencies, particularly in its cross trade activities. Politically, the merchant marine allows the Soviet Union to project its power and influence in a benign, non-threatening manner through routine trade affairs. The merchant marine also provides the Soviets with a capable and flexible sealift and military support capability.

The Soviets possess the world's fifth largest fleet (1,727 ships). The break bulk, general cargo portion of the fleet now ranks as the world's largest (1,100 units). Moreover, the Soviets are increasingly bringing more sophisticated tonnage into their inventory, such as roll-on/roll off (RO/RO) ships, sea-bee barge carriers, and super heavy lift roll-on/float off (RO/FLO) carriers such as Stakhonovets Kotov. The RO/RO inventory stands at 50 units, and is the world's largest ocean going RO/RO fleet, ranking third in total lift capability worldwide. The Soviet tanker fleet is approximately 400 units. The fleet averages 23,000 head weight tons, a size most suited for military support roles.

Operationally, the Soviets give their merchant ships three basic military tasks; at-sea support to Soviet naval units, intelligence collection, and resupply/augmentation of military operations. Approximately [deleted] of POL support to Soviet Naval units is provided by tankers chartered from the merchant fleet.

Because the Soviet merchant marine trades virtually worldwide, its ships are often in position to collect intelligence on events or objects against which other Soviet intelligence collection assets are unable to collect. Merchant ship participation in the Soviet Ocean Surveillance System (SOSS) and in other intelligence collection efforts is well documented.

Soviet merchant ships are well suited for adaptation to military and paramilitary support roles. In general their size, self-sustaining cargo handling capabilities and general deck arrangements are highly conducive to movement of military hardware. Special features, such as water wash-down decontamination equipment, IFF transponders, extensive communications capabilities, and redundant sub-systems enhance the military utility of the ships.

We have a [deleted].

In general, the Soviet Merchant Marine has had a definite impact on the world shipping market. Although much of the current disuse of free world merchant ships is attributable to the poor world economic situation, the Soviet absorption of a large percentage of the shipping market has certainly contributed to the decline in available trade. As it has grown in size and capability, an ever increasing percentage of world sea trade has been carried in Soviet bottoms. Where certain sea routes were once totally dominated by non-Soviet shipping, the Soviets now have a significant percentage of this trade.

U.S. NAVY VULNERABILITY IN A NUCLEAR AND CHEMICAL ENVIRONMENT

Senator COHEN. On the role of conventional naval power, one of the most important objectives of U.S. military power is to deter nuclear attack against our nation or our allies.

Given the vulnerability of both the U.S. and the USSR to nuclear weapons, and given our current nuclear warfighting policies, what is the reason for seeking maritime supremacy? How does this objective relate to our greater vulnerability to nuclear attack?

Indeed, how vulnerable are our naval forces to nuclear and chemical weapons, and what is being done to reduce that vulnerability? Could we be doing more to be survivable under a nuclear or chemical attack? What are the "costs" of doing so and the reasons we have not?

Admiral BAGGETT. In order to perform our mission in support of national defense policy, the Navy must be capable of operating in any threat environment.

Soviet Theater Nuclear Forces (TNF) have grown enormously. Their capability is approaching 1000 nuclear delivery platforms, excluding SSBN's, which are backed by a substantial nuclear warhead arsenal.

[Deleted.]

We are pursuing improved nuclear weapons to support our various mission areas. Perhaps the most significant development in our TNF capability is the nuclear Tomahawk to be installed on several classes of ships as well as submarines. [Deleted] and will distribute offensive strike capability across a wide variety of platforms, thus greatly complicating the Soviet targeting problem.

Increased emphasis on TNF training is being implemented at all levels of our officer and enlisted programs.

[Deleted.]

Improved defense alone is not sufficient to deny an aggressor the advantage of utilizing chemical weapons. The heat stress and physical incumbrance of protective clothing, and the time required to decontaminate ships and equipment significantly degrade our ability to conduct combat operations. A credible retaliatory capability is needed to deter the first use of chemical weapons. [Deleted.] The BIGEYE bomb is a "binary" chemical weapon under joint Navy and Air Force development. As the term "binary" implies, Bigeye incorporates two non-lethal substances which are shipped and stored separately. Chemical mixing, and generation of the toxic agent will not occur until just prior to weapon arrival on target. This design will make Bigeye suitable for shipboard deployment.

The cost of enabling the Navy to conduct sustained operations in a chemical environment is projected to be $350M in fiscal year 1984–88. Cost of Navy Bigeye development and production is projected to be $157M in fiscal year 1984–88.

WARSAW PACT SHIP CONSTRUCTION

Senator COHEN. Admiral Butts, would you provide for the record an unclassified table depicting all Soviet and non-Soviet Warsaw Pact ship construction since World War II? Please list all ships of these nations including both warships and merchant ships. Include also: date of keel layings, date of commissioning, date of retirement or lay up, mission when active, if retired, whether swapped or in reserve, where constructed, length, beam, depth of keel, displacement, load capability.

If specific answer unknown, please provide your best estimates and so signify.

For each year since World War II, please summarize this data as follows: size of the active naval force, size of the reserve, size of the merchant fleet, size of the fishing fleet, size of the inactive merchant force, number of naval and merchant ship deliveries, number of naval and merchant fleet, total displacement of the naval and merchant fleet.

Admiral BUTTS. The following tables provide our best available unclassified information on the principal types of data requested on the Soviet navy for the period since 1950: total number of major combatants in the active fleet, the average tonnage of active major surface combatants and the average age of the same ships. Trends in the average age and tonnage of surface combatants also apply in general to submarines. Similar authoritative unclassified figures on non-Soviet Warsaw Pact navies, the naval reserve fleet and the merchant marine are not available.

Table 1.—Soviet Navy: Size of the active fleet

[Suface combatants over 1,000 tons and submarines]

Year:	*Number of ships*
1950	349
1955	445
1960	579
1965	559
1970	549
1975	564
1980	636
1982	641

TABLE 2.—SOVIET NAVY ACTIVE SURFACE FLEET: TONNAGE AND AGE

[Combatants over 1,000 tons]

Year	No. of ships	Average tonnage	Average age
1950	100	3,350	10.5
1955	224	3,350	7.5
1960	226	3,050	9.0
1965	197	2,850	9.8
1970	197	2,750	12.0
1975	231	2,950	12.7
1980	263	2,950	14.5
1982	278	3,200	15.5

SOVIET OVERSEAS BASING

Senator **Cohen**. Admiral Butts, the Soviets have developed naval bases or facilities in several areas outside their borders. Examples would include Cuba, Angola, Ethiopia and Vietnam.

Would you describe the location and capabilities of these areas, and the true degree of access they enjoy in each area?

What is happening north of Japan on those islands which were never returned by the Soviets after World War II?

Is there a trend here, and how will this new basing complicate our contingency plans to rely on geographic chokepoints to bottle up their naval forces?

And just how valid is a reliance on choke point defense given the Soviet combination of overseas bases and long range naval aircraft?

Since such a choke-point based strategy on our part is so obvious, how do the Soviets plan to counter it, and what is our strategy to prevent such an achievement?

What other third world bases threaten our free access to the sea routes, and what strategy are we pursuing to neutralize or benefit from these facilities in time of conflict?

Admiral **Butts**. The principal Soviet access to Third World facilities is as follows:

Country	Type of facility	Degree of access
Cuba	Cuban ports of Havana and Cienfuegos; Cuban military airfields of San Antonio de Los Banos and Jose Marti.	Use established military and civilian installations to support twice annual Soviet naval deployments to Caribbean and frequent TU–95 BEAR recce flights [deleted]. Unrestricted access.
Guinea	Soviet commercially owned quay, storage and repair facilities at port of Conakry.	Near continuous presence of Soviet West African Squadron. TU–95 access to Guinean airfields terminated in 1977. Unrestricted access to Soviet-owned commercial facilities.
Angola	Angolan commercial port facilities and civil airfield. Soviets have constructed a shore-based communications facility and have brought in a floating dry dock.	Unrestricted use. [Deleted.] Soviet Navy maintains near continuous presence in port.
South Yemen	Yemeni commercial port facilities at Aden, also Aden International and Al Anad airfields. [Deleted.].	Aden roadstead (Socotra Island) used more than limited port facilities [deleted]. Unrestricted access.
Ethiopia	Soviet-constructed naval support facility on Dahlak Island consisting of storage buildings, POL storage and floating dry dock. Ethiopian airfield at Asmara.	Minor repair facility for SOVINDRON. [Deleted]. Unrestricted access. Ethiopians reportedly have no access to Dahlak.
Vietnam	Cam Ranh Bay civil port and airfield. Also [deleted] floating drydock and Soviet POL and commo improvements to airfield.	Minor repair facility at port. [Deleted.]

These Soviet facilities are the only ones in the Third World which threaten our access to the sea lanes.

In the Japanese Northern Territories, the Soviets have stationed [deleted]. They have also modernized their air defense/early warning radars on these islands, [deleted]. This provides strong evidence of [deleted].

Soviet attempts to gain access to overseas facilities are not new. They have sought such access since the mid-1960s when they first started to deploy significant forces out-of-area. Their record has not been one of consistent success. For example, they still have not replaced the level of logistics and repair capability in the Mediterranean afforded by Alexandria, Egypt. In the Indian Ocean they gained access to Ethiopia, but lost it in Somalia.

As far as complicating our strategy to bottle up the Soviet fleet, I would again point out that on a given day only about [deleted] of the Soviet Navy is deployed beyond home waters. Further, we believe that the bulk of Northern, Pacific, and Baltic Fleet forces will [deleted]. These overseas facilities, however, will afford the Soviets an improved capability to surveil our movements prior to the outbreak of hostilities, which should aid them in the accomplishment of their initial tasks.

Since the Soviets' naval strategy for initial wartime operations [deleted].

The operating fleet today is well aware of the possible threat that Third World bases may play in any conflict. In fleet exercises and during normal steaming period, contingency planning is routinely carried out which provides the ground work for new tactics that reflect the latest intelligence and weapons available to the fleet. The specific strategy and tactics that will be used will be dependent on the situation at the outbreak of hostilities and tailored to meet the specific threat.

SOVIET NAVAL TRENDS

Senator COHEN. Admiral Butts, what is the broad direction you foresee for the future of the Soviet navy?

Can you summarize the general mission capabilities the Soviets are trying to achieve and why?

What impact will this have on the United States?

Admiral BUTTS. I believe we will see a great deal of continuity in the roles and missions of the Soviet Navy over the remainder of this century. Protecting their SSBNs, and defending themselves from attacks from our SSBNs and carrier battle groups probably will remain their primary wartime concerns. Given the likelihood of increased instability in the Third World, I believe we will see increasing use of the Soviet Navy in "show the flag" and power projection roles. The appearance of their first true aircraft carriers in the 1990s should prove very useful in this regard. [Deleted.]

Admiral BAGGETT. The ability of the Soviets to operate more blue water capable ships in areas remote to their homeland increases the pressure on U.S. forces, already spread thin, to meet our treaty commitments. These number some 43 relationships with other nations that form the framework of the United States' vital interests. This affects us across the spectrum of naval warfare. We must be ready today; with trained and experienced personnel, sufficient munitions to fill all our ships and provide a reload capability and continue to expand our forces to reduce the risk of sequential engagements. At the same time we cannot mortgage the future by failing to modernize our forces to meet the threat Admiral Butts has described. It means that the balanced program we have submitted is necessary.

ASSESSMENT OF CAPABILITIES AND ALTERNATIVES

Senator COHEN. What is our response to these capabilities? Is it adequate?

Admiral BAGGETT. We have recognized the expansive nature of the Soviet Navy for some years. They now have the capability to project a naval presence virtually anywhere in the world. [Deleted.] I believe our long range plans and acquisition goals will provide the assets to meet and contain the Soviet threat in the future.

Senator COHEN. What alternatives are available, and why were these rejected?

Admiral BAGGETT. [Deleted.] This approach is not acceptable. Our commitments are global as are our interests.

Senator COHEN. Admiral Butts, what is the significance of the Soviet trend to develop bigger and faster submarines?

Why are the Soviets moving in this direction?

What benefits arise from increased size? From increased speed? Increased depth?

Why can we not match their improvements, knot-for-knot and foot-for-foot, and if we cannot, what must we do to maintain our advantage?

[The information requested was not received in time for printing.]

ANTISHIP CRUISE MISSILES

Senator COHEN. Admiral Butts, improved missile technology has increased the range, speed and other capabilities of anti-ship missiles.

Would you describe the capabilities of current and projected Soviet missiles?

Would you also explain how we plan to defend against these weapons in combat?

What changes will these projected weapons cause in our tactics and in our overall maritime strategy?

Admiral BUTTS. The following tables provide data on surface, air, and submarine launched antiship cruise missiles (ASCM).

[Tables deleted.]

SOVIET BOMBERS

Senator COHEN. The Soviets are developing a new bomber with improved range capability.

What will be the significance of this added capability? I also understand [deleted]. Is this true, and what can you tell us about it? Why are they doing this, and what will be the effect on their forces and their strategy?

Admiral BUTTS. The Soviets' new bomber—the Blackjack—is estimated to be capable of carrying [deleted]. If they receive this aircraft, the Soviet Navy would be able to reach [deleted].

Production of Backfire aircraft is still estimated to be approximately 30 per year, [deleted].

OSCAR SS-N-19 THREAT

Senator COHEN. Please describe the *Oscar* in detail. What is the threat posed by this cruise missile equipped submarine? How do you think it will be employed, and how would we counter it and defend against its missiles?

Admiral BUTTS. The *Oscar* Class SSGN, a large (12,000 to 14,000 tons submerged displacement) submarine, became operational in 1981. It is quieter and twice as large as any previous Soviet SSGN. We assess it can carry 24 of the 550 km range, submerged launched, supersonic, SS-N-19 anti-ship cruise missiles. [Deleted.]

We expect that the *Oscar* will be subjected to some attrition by our forward area SSN's and ASW barriers consisting of P-3 aircraft, SSN's and Captor missiles as they transit from home waters to the open ocean. Following that, [deleted] they would experience further attrition by the battle group defense in depth, which includes S-3 aircraft, SSN's, surface combatants with the SQR-19 towed array and LAMPS MK III helicopter and SH-3 helicopters.

Due to the missile's maximum range of 270 nm, the *Oscar* could be positioned anywhere within a circle around the CVBG encompassing approximately 230,000 square miles. [Deleted.]

ANTICARRIER WARFARE

Senator COHEN. Admiral Butts, would you provide one or two general scenarios describing how the Soviets might conduct an attack on a carrier battle group using bombers armed with anti-ship missiles?

How might an attack be conducted using OSCAR submarines armed with long range cruise missiles?

Admiral BUTTS. Carrier battle groups approaching Soviet territory from the North Atlantic or Northwest Pacific could expect to come under heavy attack from submarines (both torpedo and cruise missile) and land based strike aircraft as they close to within roughly [deleted] Km of the USSR. Typically, the Soviets would strive to confront carrier battle groups with coordinated, near simultaneous strikes by torpedoes, submarine launched missiles and air launched missiles. [Deleted.] In an area such as the Mediterranean, where U.S. and Soviet naval forces could be in close proximity or intermingled at the outset of hostilities, [deleted].

FLEET CAPABILITIES AGAINST ASCM'S

Senator COHEN. Admiral Baggett, what are the key elements of a defense against attacks such as those described by Admiral Butts? Explain in terms of capabilities currently in the fleet, and using weapons capabilities we expect to have in 1989.

How would you assess the likely success of such attacks?

Admiral BAGGETT. Our concept of defense-in-depth has been previously outlined in this record. Key elements could be defined in terms of readiness and sustainability, firepower and reaction time, battle space, and coordination. [Deleted.] Our current AAW capability is by no means meager, but it must continue to grow to keep pace with the increased sophistication of Soviet threat systems. By 1989, the Navy expects to field major upgrades in each of the key elements of AAW defense-in-depth.

The likely success of a coordinated ASCM attack is difficult to gauge and dependent on many factors. The robustness of the Navy's AAW capability will depend on achieving the programmed major upgrades to each of the key elements in our defense-in-depth.

MERCHANT SHIPPING THREAT

Senator COHEN. Admiral Butts, would you please assess the Soviet Navy's capability to threaten cargo ships crossing the North Atlantic and in major sea lanes around the world?

What is the capability for hostile third parties to threaten merchant shipping in locations around the world?

In the case of a Soviet submarine threat against cargo ships crossing the North Atlantic to supply Europe in wartime, how long would it take to clear the sea lanes so that reinforcements, fuel and ammo could be shipped? What is the case for Japan, Korea and China?

Admiral BUTTS. [Deleted.]

Any Third World nation situated near the world's sea lanes with the intent, modern aircraft, missile patrol boats and/or submarines poses a threat to Western merchant shipping. This potential threat will likely increase, given the recent Soviet practice of exporting relatively sophisticated naval systems such as diesel attack submarines, guided missile destroyers, frigates and missile patrol boats.

Cuba, in particular, is becoming a real potential threat to our wartime commerce. The two Foxtrot diesel submarines the Cubans received in 1979 and 1980 [deleted] give Havana an important long-range attack capability it has not had heretofore. In conjunction with Havana's Air Force, the Cuban Navy poses an increasingly credible offensive threat to shipping in the Caribbean.

Admiral BAGGETT. Given the massive land forces the Warsaw Pact could bring to bear on the Central Front, [deleted].

Given this uncertainty [deleted].

The most recent analysis of [deleted].

In the cases of resupply to Korea, Japan and China [deleted].

A major concern in both campaigns is [deleted].

PROTECTION OF MERCHANT SHIPPING

Senator COHEN. How would you assess the U.S. Navy's plans and capabilities to protect merchant ships against attack in the North Atlantic?

Admiral BAGGETT. Current plans recognize [deleted].

Senator COHEN. How would the Navy plan on protecting oil tankers traveling from the Middle East to our allies around the world?

Admiral BAGGETT. [Deleted].

NON-SOVIET THREAT TO U.S. NAVAL FORCES

Senator COHEN. Admiral Butts, our naval combat capability is compared to the Soviets' for the most part, yet the greater likelihood is combat with a small power, for example, Libyan jets or perhaps patrol boats. What is the extent of this threat from the non-Soviet world?

Admiral BUTTS. The potential non-Soviet threat to U.S. naval forces comes from two directions. First, we face nations such as India or the Peoples Republic of China whose existing large naval and air forces principally serve in a regional power projection role. Neither India nor the PRC, however, is likely to engage U.S. naval forces unless current relations deteriorate significantly. In contrast, I concur with your judgment about the greater likelihood of conflict with a radical anti-American state such as Libya. I would also add other Soviet client states such as Cuba, South Yemen, Ethiopia and Angola, and the rabidly anti-American states of Iran and North Korea. In evaluating the overall present and future naval threat posed by these nations, however, we must consider more than just the typical order of battle listings of submarines, missile armed patrol craft, surface combatants and aircraft; [deleted] the possibility of isolated or perhaps surprise strikes by Third World navies still cannot be ruled out. Cuba will remain a special case due to Moscow's more than $3 billion of military aid to date. Cuba currently has the capability to interfere with shipping throughout the Caribbean and, with its Mig-23 aircraft, can threaten U.S. naval forces in the Gulf of Mexico, Caribbean and Atlantic Ocean.

THIRD WORLD THREATS

Senator COHEN. How would you assess our capability to deal with those other potential dangers, and what trends do you see for the future?

Admiral BAGGETT. [Deleted.]

SOVIET CTOL AIRCRAFT CARRIER

Senator **Cohen**. Admiral Butts, last year we heard testimony about a new Soviet nuclear powered aircraft carrier, and you have talked about this again today.

What specific facts have our intelligence sources provided to support your conclusion that the Soviets are building a nuclear powered, conventional take-off and landing aircraft carrier?

Why do you think they are moving in this direction, away from the smaller carriers which can only launch aircraft vertically?

How many of these or similar carriers do you expect to see? Do you anticipate they will move towards carriers similar to our NIMITZ class nuclear powered large-deck carriers?

Admiral **Butts**. [Deleted.]

The past roles and missions of the Soviet Navy did not require the capabilities of a CTOL carrier. As these missions have evolved, the Soviets appear to have concluded that CTOL tactical aviation is necessary, particularly to support expanded Northern and Pacific Fleet sea control/sea denial operations and the projection of naval power in distant areas.

We expect the first of these large-deck carriers will become operational by about 1990 [deleted]. They will almost certainly be nuclear-powered and displace 60–75,000 tons.

U.S. STRATEGY

Senator **Cohen**. Admiral Baggett, what implications does this have for U.S. force levels and U.S. maritime strategy? Do you feel it will be necessary to counter this threat, and if so how? Will this detract from other U.S. missions?

Admiral **Baggett**. The Navy that results from the fiscal year 1984 program is an increasingly powerful one. The Soviet move toward large deck nuclear powered aircraft carriers is distinctly a vindication of the carefully structured strength of our Navy. They recognize the inherent flexible power projection of carrier battle groups with the reach provided by conventional take-off and landing aircraft. We feel that the lead we have in the field will be difficult to overcome provided our current force level goals materialize. Our maritime strategy of containment and global presence should remain valid even if the Soviets embark on a sustained carrier building program.

Questions Submitted by Senator Carl Levin

SUBMARINE RELIABILITY

Senator **Levin**. Admiral Butts, is it not true that Soviet strategic ballistic missile submarines suffer mechanical, reliability and reactor problems which inhibit greatly Soviet abilities to increase their peacetime alert status much above the usual 11 to 15 percent of the fleet normally deployed?

Admiral **Butts**. No, sir. [Deleted.]

SSBN SECURITY

Senator **Levin**. On the other hand, U.S. SSBN alert rates are between 55 and 60 percent, thus assuring many more survivable RVs available for nuclear deterrence and retaliation than the number available to the Soviets, is that not so?

Admiral **Butts**. Approximately [deleted] of the U.S. SSBN force operational on a daily basis. The remainder are in shipyard availabilities or shakedown. Of the [deleted] operational, approximately [deleted] of these are at sea on an average day. Thus, on an average day about [deleted] of the U.S. SSBN force is at sea and totally survivable. With [deleted] warning the number of U.S. SSBNs at sea would rise to approximately [deleted] of the force. By contrast, the Soviets keep less than [deleted] percent of their SSBN force at sea on a routine basis. However, with warning, the number of Soviet SSBNs at sea is expected to increase to as much as [deleted] of their total force [deleted]. Thus on a daily basis, the U.S. maintains a larger number of RVs survivable at sea, but with [deleted] notice both the U.S. and the Soviets would substantially increase the number of RVs survivable at sea and the difference would be substantially reduced.

Senator **Levin**. Would you agree with the following: "A broad range of recent analyses are unanimous in their views that the SSBN force is essentially invulnerable today and will remain so for the foreseeable future."

Admiral **Butts**. [Deleted.]

SOVIET NUCLEAR SUBMARINE

Senator Levin. Soviet nuclear submarines continue to lag behind Western, especially U.S., submarines in quietness and sensor capabilities, is that not so?

Admiral Butts. [Deleted.]

SOVIET PASSIVE ACOUSTIC SENSORS

Senator Levin. Soviet submarines have particular problems [deleted].

Admiral Butts. Yes, [deleted].

SSBN SECURITY

Senator Levin. Is it not true that in more than 2,000 patrols by our strategic ballistic missile submarines since we first deployed them, [deleted].

Admiral Butts. [Deleted.] Our plans to counter this possible increased effectiveness include the deployment of the Trident submarine and the Trident missile. The longer range Trident missile will permit operation of our submarines in more than ten times the present patrol area size thus increasing Soviet search areas significantly. The Trident submarine incorporates significant quieting improvements and increased quiet patrol speeds to reduce detection and complicate search by advanced sensors. The larger Trident submarine also permits installation of advanced countermeasures equipment as potential threats become identified. Advances incorporated into the Trident weapons system will provide increased flexibility in the range of available patrol depths and speeds. [Deleted.] Our SSBN security program and the improvements in survivability we have put into our submarines and weapons systems are expected to provide sufficient and flexible response to future threats which might develop from Soviet research and provide for continued survivability of our SSBN forces.

MAJOR SHIPBUILDING (1970–79)

Senator Levin. Your statement discusses the Soviet navy's shipbuilding program since 1965. It does not discuss those of our allies or of ourselves. Thus, there is no balance in your presentation. I asked the Library of Congress to compare the shipbuilding program of ourselves and our major allies with those of the Soviets and their major allies. This comparison yields a more balanced picture of activity in the naval shipbuilding area during the last decade.

Is it not true that the U.S. and its allies outbuilt the Soviets and their allies 200 ships to 109 in almost all major categories of ships directly related to an ability to wage a conventional war on the high seas away from coast areas?

Admiral Baggett. Considering just ships of 3,000 tons and above and all submarines except the ballistic missile forces, the shipbuilding figures for the past decade (1970–1979) are as follows:

1970–79: NATO + France, 262; Warsaw Pact, 168.

However, as stated in the Library of Congress research document the comparison by tonnage, which is a significant indicator of overall shipbuilding effort, was as follows:

1970–79: NATO + France, 1,584,402 tons; Warsaw Pact, 1,585,000 tons.

Additionally, while the U.S. and NATO commissioned a larger number of ships during the decade of the '70's, it should be understood that after allowing for the ships which were decommissioned during the same period, the advantage is dramatically reduced. For instance, without considering any of the NATO ships decommissioned and adding all NATO acquisitions, the apparent advantage implied by the Congressional study is completely changed:

	NATO + France	Warsaw Pact
Acquisitions	[1] 311	[1] 367
Decommissioned	[2] 295	193
Net	+16	+174

[1] From Congressional Research Study.

[2] U.S. decommissionings only excluding those decommissioned by United States and sold or leased to NATO.

ATTACK SUBMARINE BUILDING RATES

Senator LEVIN. Is it not true that the United States and its allies actually outbuilt the Soviets and their allies [deleted] in attack submarines, both nuclear and conventionally powered vessels, during 1970–79?

Admiral BAGGETT. The attached delivery schedule is our best estimate of the Soviet and U.S./NATO allies attack submarine building program during the period 1970 through 1979. The Soviets delivered a total of [deleted] diesel and nuclear attack submarines whereas the United States and NATO allies (including France) delivered a total of [deleted] such submarines. For perspective it should be noted that during this same period the Soviets delivered [deleted] SSBNs while France alone among the NATO allies produced only [deleted] SSBNs.

ATTACK SUBMARINE DELIVERIES 1970–79

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	Total
Soviet:											
SS/SSN/SSGN	[Deleted.]										
SSBN	[Deleted.]										
Total deliveries	[Deleted.]										
United States:											
SSN/Total deliveries	[Deleted.]										
NATO/France:											
SS/SSN	[Deleted.]										
SSBN	[Deleted.]										
Total deliveries	[Deleted.]										
Total Soviet attack	[Deleted.]										
Total U.S./allies attack	[Deleted.]										

AMPHIBIOUS LIFT CAPABILITY

Senator LEVIN. Did we not outbuild them, the United States alone, 34 to 24, in large amphibious ships, and wasn't our margin in delivered tonnage, which is a clear measure of the capacity to transport and land troops and equipment, more than three to one, or 335,000 tons to 89,850 tons?

Admiral BAGGETT. It is true that United States new construction of amphibious shipping outnumbered Soviet construction in numbers, tonnage, and troop lift capability in the 1970's. [Deleted]. During the same period 35 new construction ships replaced 92 aging amphibious ships in the United States fleet. The large amphibious ship net change considering both acquisition and decommissioning, is shown below.

AMPHIBIOUS SHIPS 1970–79

	United States	U.S.S.R.
Acquisitions	35/524,236	[Deleted.]
Decommissioned	92/729,000	[Deleted.]
Net	−57/−205,364	[Deleted.]

It must be noted that the Soviet amphibious mission does not require supporting major operations at great distances from their homeland [Deleted.] Also the Soviet amphibious construction program is supplemented by a very large civilian shipbuilding program that includes many ships adaptable for amphibious operations.

DESTROYER PRODUCTION

Senator LEVIN. In major surface combatants, didn't the U.S. alone outbuild the Soviet my almost three to one in numbers and tonnage in destroyers, 25 to 9 and 145,750 tons to 54,000 tons?

Admiral BAGGETT. From 1970 to 1979 the U.S. Navy took delivery on 25 Spruance class destroyers, the first major destroyer building program since the late 1950's to mid 1960's. They were to replace the World War II vintage destroyers which comprised the bulk of the U.S. destroyer force. During this decade the U.S. Navy decommissioned 96 of these older destroyers of approximately 3,000 ton full load displacement. While the Soviets built only [deleted] destroyer type ships during the period, it was a period of major surface combatant construction in their Navy. In the 1970's they completed [deleted] Kiev class carriers [deleted] Kresta II class cruisers and [deleted] Kara class cruisers. Two new classes of Soviet destroyers, and two classes of cruisers are currently under construction.

While the U.S. and NATO commissioned a larger number of ships during the decade of the 1970's, after allowing for ships which were decommissioned during the same period the advantage is dramatically reduced. For example, if the large combatants (1,500 tons or more) decommissioned during this period are considered:

1970–1979

	United States	U.S.S.R.
Acquisitions	160/1,191,636	367/1,585,053
Decommissioned	[1] 370/3,463,500	193/348,300
Net	−210/−2,271,964	+174/+1,236,753

[1] U.S. decommissionings only excluding transfers to NATO (World War II vintage destroyers decommissioned 96/334,600).

These numbers do not include the NATO ships acquired and decommissioned but even without consideration of any of the NATO ships decommissioned and adding all NATO acquisitions the apparent advantage implied by the Congressional study is completely changed:

	United States and NATO+France	Warsaw Pact
Acquisitions	[1] 311/1,584,402	[1] 367/1,585,053
Decommissioned	[2] 295/3,204,000	193/348,300
Net	+16/1,619,598	+174/+1,236,753

[1] From Congressional Research Study.

[2] U.S. decommissionings only excluding transfers to NATO (World War II vintage destroyers decommissioned 96/334,600).

U.S./SOVIET FRIGATE CONSTRUCTION COMPARISON, 1970–79

Senator **Levin**. In frigates, the United States alone outbuilt the Soviets by almost two to one in numbers and tonnage, 43 to 21 ships, and 130,661 tons to 72,450 tons, did it not? Don't the allies add another 37 ships and 144,897 tons to our side of the frigate equation?

Admiral **Baggett**. From 1970 to 1979 the U.S. Navy took delivery on 43 Knox and Oliver Hazard Perry class frigates. Our allies built or acquired another 39 frigates. The Soviets built 31 frigates and 49 corvettes in the same period. When we consider that U.S. and allied navy acquisitions were predominantly replacement forces, the picture is dramatically changed as shown below.

1970–79 FRIGATE

	United States	Allies	U.S.S.R.
Acquired frigates	43/175,310	39/117,812	[Deleted.]
Decommissioned	33/62,400	46/92,130	[Deleted.]
Net	+10/112,910	−7/+25,682	[Deleted.]

Caution must be used in comparing numbers of frigates between navies. The primary mission of a frigate is anti-submarine warfare and the threat which U.S. frigates were built to combat is the large and modern Soviet submarine force. Smaller frigates, known as corvettes in some navies, have not been included in this comparison but they serve quite well for anti-submarine warfare in waters around the periphery of Europe and Asia. Allied frigate forces are considered in our planning to support Europe and Asia in the event of Soviet aggression.

CONVENTIONAL SHIPBUILDING

Senator LEVIN. In unclassified terms, who has acquired more ships with the capabilities to conduct conventional warfare on the open ocean, surface combatants displacing 3,000 tons and above and nuclear/diesel attack/cruise missile submarines, during the 1970's, 1970 to 1979, the supposed "decade of neglect" for our naval forces: the U.S. and its NATO allies, including France, or the Soviet Union and its Warsaw Pact allies? Excluding the allies on each side, please answer this question also.

Admiral BAGGETT. Considering just the category of 3,000 tons and above and excluding the large number of Soviet ballistic missile submarines built during the 1970's, the shipbuilding figures are as follows:

1970–79

United States and NATO allies	262
United States	156
Warsaw Pact (including U.S.S.R.)	168
U.S.S.R.	168

However, in total numbers of ships without tonnage limitations, the Congressional Research Service naval ship acquisition study stated the Soviet Union outbuilt the United States by 129 percent during the period 1970 to 1979. In tonnage the Soviets exceeded the U.S. by 33 percent during the same period.

While the U.S. and NATO allies together commissioned a larger number of ships during the decade of the 70's, it should be understood that after allowing for ships which were decommissioned during the same period, the advantage is dramatically reduced. For example if the large combatants (1,500 tons or more) decommissioned during this period are considered:

1970–79

	United States and NATO allies	Warsaw Pact (including U.S.S.R.)
Acquisitions	[1] 311/1,584,402	[1] 367/1,585,053
Decommissioned	[2] 295/3,204,000	193/348,000
Net	+16/−1,619,598	+174/+1,236,753

[1] From Congressional Research Study.

[2] U.S. decommissionings only (excluding those ships transferred to NATO countries).

For a comparison of the U.S. and U.S.S.R., the net change is just as dramatic:

	United States	U.S.S.R.
Acquired	160/1,191,636	367/1,585,053
Decommissioned	370/3,463,500	193/348,300
Net	−210/−2,271,964	+174/+1,236,753

SOVIET NAVY PROFICIENCY

Senator LEVIN. Would you agree that the U.S. Navy surpasses the Soviet Navy in at least the following categories: combat proficiency of personnel; submarine sensors and weapons targeting capabilities; endurance/sustainability of our fleets to fight a conventional war on the open ocean; sea-based tactical aircraft; land-based, long-range anti-submarine warfare patrol aircraft; amphibious ships, their technologies and total lift capacity; air-to-air missile capabilities; all aspects of open ocean anti-submarine warfare?

Admiral BUTTS. [Deleted.]

UNITED STATES/SOVIET CRUISE MISSILE COMPARISON

Senator **Levin**. Is it not true that the Soviets actually have added very few anti-ship cruise missile launchers with ranges within 100 miles to their navy since 1975, while the U.S. has made dramatic improvements in this area of naval capability since then?

Admiral **Baggett**. Since 1975 the Soviet Navy has added [deleted] vessels to its fleet which carry [deleted] cruise missiles having a range of less than 100 nautical miles (NM). The U.S. Navy has installed [deleted] in this period.

UNITED STATES/SOVIET MEDIUM RANGE ASCM COMPARISON

Senator **Levin**. Is it not true that we expect to actually exceed the Soviets substantially in this area by 1985?

Admiral **Baggett**. Our anti-ship cruise missile (ASCM) program [deleted]. The relative ranking of the two navies in 1985 is not clear but a great numerical advantage by either is unlikely. Caution must be used in drawing any conclusions from a numbers versus numbers comparison of United States and Soviet ASCM systems. Any analysis of this area needs to address the mission of the two navies, system capability and proposed operational use of the systems. We have designed and are procuring ASCM systems which will enable the U.S. Navy to accomplish it's mission in the face of a formidable Soviet threat. We intend to be able to take the fight to the enemy and win.

SOVIET NAVY CAPABILITIES

Senator **Levin**. Although improving, it is my understanding that the Soviet navy's "capabilities for sustained combat" are limited [deleted].

Could you elaborate on these deficiencies, and would you acknowledge that despite Soviet attempts to overcome these through forward deploying tender ships and obtaining foreign port rights, the U.S. Navy's capabilities for sustained combat substantially exceed that the Soviets?

Admiral **Butts**. As late as the mid-1970s, the Soviet Navy could be described as a fleet with capabilities maximized for a short, intense war [deleted]. In the 1970s, however, new classes of generally larger, more sophisticated ships incorporating greater endurance, larger weapon loads, and extensive communications and electronic warfare systems began to enter service, resulting in enhanced capabilities for sustained conventional combat and distant area deployments. But, in spite of these improvements and the expanded use of surrogate warm-water ports, the Soviet navy still lacks the extensive logistics chain necessary to support and supply the equipment and materials required for sustained, distant operations. I would agree that the U.S. Navy's capabilities in this regard substantially exceed those of the Soviets.

SOVIET NAVY COMBAT PROFICIENCY

Senator **Levin**. For both doctrinal as well as mechanical reliability reasons, the operating rates of Soviet general purpose naval forces are lower than those of U.S. forces. This results in much lower levels of combat proficiency of Soviet naval personnel, would you not agree?

Admiral **Butts**. I would not necessarily agree that Soviet naval personnel have a low level of combat proficiency because of the lower operating rates of their general purpose naval forces. [Deleted.] I do agree, however, that the combat proficiency of our naval forces would likely be higher.

OPERATIONS AND MAINTENANCE

Senator **Levin**. Is it not true that maintenance and crew conditions even limit the capabilities of Soviet ships even for sustained peacetime operations?

Admiral **Butts**. It is true that Soviet peacetime operations are constrained by maintenance schedules. The Soviets [deleted].

SEA-BASED AIRCRAFT

Senator **Levin**. Even with deployment in the late 1980s of a large aircraft carrier capable of launching conventional fighter aircraft, and with upgraded vertical/short take-off and landing—VSTOL—aircraft for its similar carriers, the Soviet Navy still will remain quite limited in its sea-based tactical combat air capabilities compared to the United States, will it not?

Admiral Butts. Yes, sir. Although new Soviet CTOL carriers [deleted] the Soviet Navy will still remain inferior to the U.S. Navy in sea-based TACAIR combat capabilities.

SOVIET SURFACE FORCES LIMITATIONS

Senator Levin. Without adequate sea-based tactical air coverage, the Soviet surface fleet remains extremely vulnerable to attack by U.S. and allied aircraft, does it not?

Admiral Baggett. Yes, sir, the Soviet surface fleet is more vulnerable to attack because of their limited sea-based tactical air coverage; however, these Soviet surface ships bristle with surface-to-air missile systems and air defense machine guns (ADMG). The new Sovremmenny DDG class with its SA-N-7 and ADMG 630 weapons systems is a particular AAW threat. [Deleted.]

As to our sea-based tactical aircraft advantage, this may not be long lived. [Deleted.]

SOVIET ASW CAPABILITY

Senator Levin. Given their limited anti-submarine warfare capabilities, the Soviet surface fleet also remains vulnerable to attack by U.S. and allied submarines, is that not so?

Admiral Baggett. That is an accurate assessment of our capabilities.

SOVIET SURFACE FORCE LIMITATIONS

Senator Levin. These limited capabilities to defend their own ships from air attack still will require that, in wartime, Soviet surface forces would have to stay within range of land-based aircraft to protect them from U.S. forces, would it not? This restricts the operational flexibility of the Soviet Navy, especially in regions farther away from the USSR and on the open ocean during sea lane interdiction attempts, does it not?

Admiral Baggett. [Deleted.]

SOVIET NAVAL DEFICIENCIES

Senator Levin. The CIA reported the following in its Intelligence Assessment of Soviet military trends in the 1980s: [Deleted.]

Would you agree with this assessment of both how the Soviets view the deficiencies of their naval forces as well as with those deficiencies themselves?

Admiral Butts. Yes, I agree with this assessment.

SOVIET ANTICARRIER WARFARE

Senator Levin. The CIA also stated: [Deleted.]

Would you agree with those assessments?

Admiral Butts. Yes, I would generally agree but with some qualification. The Soviets apparently feel they do not have [deleted].

SHIP DEPLOYMENTS

Senator Levin. Your statement refers to the political uses of the Soviet fleet and its activities far away from the USSR. Is it not true that in 1980 the United States actually let in out of area deployments of the most impressive ships, surface combatants and submarines, while more than half of the Soviet overseas deployments were in the less impressive auxiliaries, amphibious ships and other, less politically potent vessels?

Admiral Butts. That is correct. Of the [deleted] ship days U.S. Navy general purpose forces spent deployed out of area in 1980, 78 percent were by combatants (attack submarines, surface combatants, and amphibious warfare ships). Soviet Navy general purpose forces, on the other hand, spent [deleted] ship days deployed out of area in 1980, of which 35 percent were by combatant types.

SOVIET AMPHIBIOUS CAPABILITY

Senator Levin. Although Soviet power projection capabilities have received much publicity, is it not true that despite improvements, the Soviet amphibious capabilities remain very limited and markedly inferior to U.S. capabilities?

Admiral Butts. Yes. [Deleted].

SOVIET AMPHIBIOUS LIFT CAPACITY

Senator LEVIN. The CIA believes that although the Soviet amphibious force has [deleted]. Would you agree with this assessment?

Admiral BUTTS. The Soviet Navy has [deleted].

SOVIET POWER PROJECTION

Senator LEVIN. The CIA believes that, even with [deleted].

Would you agree? [Deleted.]

Admiral BUTTS. I agree with this assessment. [Deleted.]

SOVIET AMPHIBIOUS CAPABILITIES

Senator LEVIN. The CIA concluded the following about how the Soviets [deleted]. Would you agree with both assessments?

Admiral BUTTS. I would agree, if by potential demands you mean [deleted].

SOVIET INTEREST IN AMPHIBIOUS CAPABILITIES

Senator LEVIN. Admiral Butts' statement predicts the Soviets probably will [deleted].

Admiral BUTTS. It's hard to say exactly why [deleted]. Emphasis on amphibious utility in merchant ship construction—especially RO-RO types—probably will remain unchanged. Soviet interest in the use of [deleted].

"KIROV"-CLASS CGN

Senator LEVIN. Admiral Butts said one of the reasons the Soviets only are building two large *Kirov* class cruisers might be because they are so expensive.

Considering the impressive armament and political impact we attribute to the *Kirov* ships, are there not some deficiencies and vulnerabilities which have forced the Soviets to conclude it is not worth building any more? What are they?

Is the *Kirov*, because it has so much electronic gear and equipment, any more vulnerable to our missiles because it "radiates" so much? Have there been problems in the reliability of all this, as well as in their coordinating the simultaneous operation of all these systems?

Admiral BUTTS. We know of no [deleted] that might have caused its cancellation after two units.

Observations of *Kirov's* operations do not lead us to believe there are [deleted].

SOVIET CTOL AIRCRAFT

Senator LEVIN. Admiral Butts talked about Soviet [deleted] and about our projection they are building such a larger carrier. He said [deleted]. He spoke about how developing such an aircraft for a carrier is a complicated endeavor. What problems would you expect the Soviets to experience in this [deleted].

Admiral BUTTS. We would not expect the Soviets to encounter unusual developmental problems in designing and building a CTOL aircraft, [deleted]. However, we would expect considerable difficulty in operating them capably at sea. Flight deck operations have been likened to a ballet—something which requires a great deal of practice and precision. [Deleted.]

WEAPON EFFECTIVENESS

Senator LEVIN. Admiral Butts testified about development of a [deleted] talked about development of [deleted] Admiral Butts [deleted].

Even though the Soviets are developing [deleted] improvements to their weapons themselves?

Admiral BUTTS. The Soviets have introduced [deleted].

SOVIET NAVAL CAPABILITIES

Senator LEVIN. Admiral Butts, would you agree with the following conclusions about Soviet naval capabilities?

Two of the Soviet fleets, the Baltic and Black Sea, are landlocked and the other two are vulnerable to bad weather and limited access to the sea.

U.S. sealift capability exceeds that of the Soviets. Our submarines are far quieter than Soviet subs, which are notoriously noisy.

Our capability to detect and destroy Soviet submarines, our ASW capability, is definitely more advanced than the Soviet capability to detect and destroy our submarines.

Less than one half the surface ships in the Soviet Navy have anti-aircraft missiles.

There are far fewer and less capable air defense aircraft in the Soviet fleet.

The average displacement in tons of ships delivered to the U.S. Navy during the 1970–1979 period far exceeded the average displacement in tons of the ships delivered to the Soviet navy during the same period.

Admiral BUTTS. The answers to your questions would be a qualified yes. If we look at our naval forces as individual platforms, it is possible to say that they are individually more capable than the Soviet naval forces. However, it is necessary to look at the respective navies from the standpoint of geography, mission and roles. When that is done, it becomes obvious that the Soviets do not have to defend sea lines of communication comparable to our own. Their mission is much more that of defense of the Soviet homeland with excursions at times and places of their own choosing to interdict our sea lines of communications, often through surrogate naval and air forces. Considering these significant factors, our Navy is spread very thin indeed, even considering the better individual capability of a particular platform as has been pointed out. Our need is for greater numbers of capable ships.

U.S. RADIATED NOISE TRENDS

Senator LEVIN. Admiral Baggett, you presented a chart that quantified the quieting of Soviet submarines over time. Would you furnish a comparable set of graphs for U.S. submarines; both SSNs and SSBNs?

Admiral BAGGETT. The attached graphs show the general trend of U.S. radiated noise signatures from 1960 to the present.

[Charts deleted.]

NAVAL FORCES CAPABILITY

Senator LEVIN. Admiral Baggett, you and Admiral Butts both have testified that our naval forces are more capable than the Soviet naval forces. Yet you have also stated that the U.S. Navy no longer has even a slim "margin of superiority" over the Soviet navy. Please explain the logical contradiction between these statements.

Admiral BAGGETT. Yes, our naval forces ship per ship or battle group per battle group would be superior because of individual technology and capability. But we are discussing a contrast between powers where the technologically superior power is spread too thin, where the Soviet navy can put our naval forces at risk with pure numbers. We are also integrating in our statements a recognition of the differing commitments and tasks of the two navies.

QUESTIONS SUBMITTED BY SENATOR SAM NUNN

EP-3

Senator NUNN. How important to Naval Intelligence and to the fleet commander are the capabilities provided by the EP-3? How does the EP-3 support the fleet commander in tactical situations? What other capabilities does the Navy have to perform this role; in other words, what would happen if the EP-3 capability did not exist? How important is the mission of the EP-3 to your work in determining the roles, missions and activities of the Soviet Navy? What priority should the program to update the EP-3 platform and the EP-3 sensor package be given?

Admiral BUTTS. [Deleted.]

SOVIET NAVY WEAKNESSES

Senator NUNN. Admiral Baggett. What do you consider the main weaknesses of the Soviet Navy? What do you consider the main strengths of the U.S. Navy against these weaknesses?

Admiral BAGGETT. The Soviet Navy has several distinct weaknesses or disadvantages which we are prepared to cash in on. Geography is not in their side if they choose to meet us on the high seas in an attempt to disrupt our sea lines of communication (SLOC). They must transit long distances or pass through various straits and chokepoints, in some cases both. [Deleted.] Many of their cruise missile launching submarines must still surface to launch [deleted]. Additionally, the Soviets have great respect for our ASW forces [deleted]. Again, Soviet acoustic disadvantage places them in a position of weakness [deleted]. From this our strengths are obviously our highly capable attack submarines and broad range of other ASW forces. These include our [deleted] airborne systems, both fixed and rotary wing, and the wide range of ASW capable surface combatants. In cooperation with our allies we are prepared to use mining and barrier patrols [deleted]. The essence of our carrier battle groups is the flexibility to keep the Soviets off balance. [Deleted.] Our heavy emphasis on at-sea time for our ships and aircraft, both forward deployed and in local operating areas, while expensive in operating costs, builds in both reliability and experience. Our system of fleet exercises prepares our sailors to do the kinds of things we expect across a broad spectrum of potential warfighting scenarios.

ANTISUBMARINE WARFARE

Senator NUNN. What developments do we see in the Soviet forces designed to diminish or negate U.S. advantages in antisubmarine warfare? Are the Soviets placing an emphasis in this area?

Admiral BUTTS. The Soviets are expected [deleted].

The Soviets continue [deleted].

The Soviets have also [deleted].

USN/USAF COORDINATED OPERATIONS

Senator NUNN. Have you changed your method or process of calculating the maritime balance to take into account the Navy-Air Force cooperative agreement or does this year maritime balance assessment represent strictly a naval comparison?

Admiral BAGGETT. [Deleted].

LAND-BASED TACAIR CONTRIBUTION TO MARITIME OPERATIONS

Senator NUNN. Have you included in your analysis the threat of the Soviet naval orienterd Backfire bombers designed to threaten our surface fleet? What is the potential of land-based tactical aviation to diminish or negate this threat? What contribution to protecting the fleet could land-based tactical aviation stationed in an area to threaten the Backfire bases, Turkey, for example, make?

Admiral BAGGETT. The Navy is very much aware of the threat to surface fleets posed by the Backfire bomber. Analysis, tactical development, and procurement programs are all responsive to this threat. An example of tactical development is the Navy-Air Force cooperative agreement to utilize land-based air in support of maritime operations. [Deleted]. Attrition of Backfire assets, by whatever means, will lessen the threat faced by fleet units and by other allied units included in Backfire doctrinal mission responsibilities.

CHOKE POINT NAVY DOCTRINE

Senator NUNN. Is bottling up the Soviet fleet, both surface and subsurface, at appropriate choke points an element of naval operational doctrine? How does the Navy propose to do this, and can land-based forces contribute in any meaningful way? There have been media reports of Marine-operated land-based cruise missiles.

Admiral BAGGETT. Geography does not favor the Soviet Navy and our maritime strategy applies pressure to ensure that the Soviet Navy remains bottled up at the choke points. [Deleted.]

EMPLOYMENT OF NAVAL FORCES AGAINST THE SOVIET FLEET

Senator NUNN. What in your judgment is the best way to sink the Soviet fleet?

Admiral BAGGETT. [Deleted.]

SOVIET STRATEGIC RESERVE

Senator NUNN. What in your judgment is the best way to put the Soviet strategic submarine capability, [deleted] at risk? How important is the Soviet SSBN fleet to their concept of deterrence and operations?

Admiral BAGGETT. In my judgment the best way to put the Soviet strategic submarine force at risk is to [deleted].

Senator COHEN. Thank you, gentlemen.

We stand adjourned.

[Whereupon, at 12:42 p.m., the subcommittee recessed subject to the call of the Chair.]

DEPARTMENT OF DEFENSE AUTHORIZATION FOR APPROPRIATIONS FOR FISCAL YEAR 1984

TUESDAY, MARCH 22, 1983

U.S. Senate,
Subcommittee on Sea Power and Force Projection,
Committee on Armed Services,
Washington, D.C.

NAVY SHIPBUILDING PROGRAMS

The subcommittee met in open session at 10:10 a.m., in room SR-222, Russell Senate Office Building, Senator William S. Cohen (chairman) presiding.

Present: Senators Cohen, Quayle, Wilson, Nunn, Hart, and Levin.

Staff present: L. Wayne Arny III, professional staff member; James G. Roche, minority staff director; James R. Locher III, and Patrick L. Renehan, professional staff members; Mark B. Robinson, research assistant; Kathleen L. McGuire, staff assistant.

Also present: Jim Dykstra, assistant to Senator Cohen; Hank Steenstra, assistant to Senator Quayle; Frank Sullivan and Mary Shields, assistants to Senator Stennis; Arnold Punaro, assistant to Senator Nunn; Bill Lind, assistant to Senator Hart; and Peter Lennon, assistant to Senator Levin.

OPENING STATEMENT BY SENATOR WILLIAM S. COHEN, CHAIRMAN

Senator Cohen. The subcommittee will come to order.

The Navy's shipbuilding and conversion program is the key to developing and maintaining a strong Navy for the future. Due to the large investments necessitated by the complexity of modern warfare, the shipbuilding program traditionally receives a great deal of congressional attention. This year will be no different.

This morning it is my pleasure to welcome Mr. George Sawyer, Assistant Secretary of the Navy for Shipbuilding and Logistics, and Vice Admiral Walters, the Deputy Chief of Naval Operations for Surface Warfare.

I also extend a warm welcome to Vice Admiral Fowler, Commander of the Naval Sea Systems Command, and Vice Admiral Thunman, the Deputy Chief of Naval Operations for Submarine Warfare. I understand that Admirals Fowler and Thunman do not have prepared testimony, but are available to answer questions.

With the four of you, I expect that any questions that members may have can be answered.

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There are several key issues that we must comprehensively address during today's hearing.

First, there is the issue of whether our surface ships are truly as capable as advertised. The CG-47 Aegis cruiser, in particular, has been a continuing target of criticism, and it is important that we have a full airing of these accusations and the responses.

At an appropriate time during this hearing, we will go into closed session for the purpose of reviewing the results of the test and evaluation of the Aegis combat system.

The second key issue is whether the Navy could second-source the Aegis radar and combat system. We second-source major procurement items, including nearly every ship in the 5-year plan, except LHD's, SSBN's, and CVN's.

Should we not be second-sourcing the major combat systems on these warships, as well?

We are using Aegis on the CG-47's, which are being bid competitively, and an Aegis-type radar and combat system will be used on all the DDG-51's.

Given the large number and cost of these systems, it seems important that competition be established among multiple suppliers.

Third, we need to review more completely the Navy and Department of Defense's decision to charter, vice procure, certain ships for the maritime prepositioning ship program and the T-5 tanker program.

Finally, we need to examine closely the combat capability you have proposed for the DDG-51 class guided missile destroyer, and your proposals and progress to control the cost of these ships, now and in the future.

I expect that we will be able to fully explore these key issues with the expert witnesses.

Since there are no other members here at this particular time, you may begin, Mr. Sawyer.

STATEMENT OF HON. GEORGE SAWYER, ASSISTANT SECRETARY OF THE NAVY FOR SHIPBUILDING AND LOGISTICS, ACCOMPANIED BY VICE ADM. ROBERT C. WALTERS, U.S. NAVY, DEPUTY CHIEF OF NAVAL OPERATIONS FOR SURFACE WARFARE; VICE ADM. EARL B. FOWLER, U.S. NAVY, COMMANDER OF THE NAVAL SEA SYSTEMS COMMAND; AND VICE ADM. N. R. THUNMAN, DEPUTY CHIEF OF NAVAL OPERATIONS FOR SUBMARINE WARFARE

Mr. Sawyer. Good morning, Senator. It is indeed a pleasure to appear before you and this committee again today to describe to you more fully our plans for the fiscal year 1984 shipbuilding program.

I have prepared remarks and with your permission, I would like to introduce those in the record.

Senator Cohen. They will be included in full in the record.

Mr. Sawyer. I have a few brief remarks as an overview.

I want to assure you that the program which we have submitted to you in the 1984 shipbuilding plan continues the momentum which, with the assistance of this committee, we were able to establish in 1982 and 1983 and build toward the assured attainment of our objective, the 600-ship 15-carrier battle group Navy, by the end of this decade.

We are acutely aware that the attainment of these goals is not without its problems and potential pitfalls. Technically we believe that we are resolving the issues of affordability of our ships versus unit capability, an issue which you raised for further discussion today.

Second, the proper allocation of our resources in the Navy, particularly between force structure and modernization and readiness and sustainability. Within the issue of force structure itself, of course, is the attainment of a balance of forces so that we can achieve the multimission capability necessary to win a war at sea.

Last, for those of us who are concerned with the shore establishment there is the maintenance and management of our industrial base, particularly that base which resides not only in private industry, but also the very essential critical base within the Government.

I would like to take a few minutes to review our performance of the past year and a half and our prospects this year.

In terms of ships, we delivered 25 ships last year, 80 percent of which were on or ahead of schedule and on contract budget. At the current time we have over 110 ships in work in process in the various shipyards of the United States. Approximately 18 of those shipyards are currently involved in Navy new construction and conversion which represents about 70 percent of the generally perceived major active shipbuilding base in the country.

For the first time in memory we awarded all of our fiscal year 1982 shipbuilding contracts in 198? and indeed have gone a long way toward awarding our 1983 program, over 80 percent of which is currently under contract.

Of our 1983 anticipated deliveries, we expect 90 percent, approximately 19 of 21 ships, will deliver this year ahead of or on schedule. It is a pretty good batting record, in my opinion.

Also, for the first time, in many years there was an absence of shipbuilding claims. Over the last year and a half there have been no new claims entered for outstanding claims on the books in the area of new construction or conversion.

As you pointed out, Senator, we have moved strongly in implementing a number of the major management incentives that were set forth by Deputy Secretary of Defense Carlucci at the outset of this administration.

First and foremost is the move toward more competition. About 95 percent of the ships, in terms of new construction and conversion, that are in the 5-year plan will be awarded competitively, as you pointed out, leaving only the large LHD-1 class ships, the nuclear carriers and Trident submarine as sole-source procurement.

We have moved into multiyear category of shipbuilding, counting on the program stability which we think is so important, particularly in this area of major ship construction. The two carrier awards, which it appears right now will exceed the $750 million savings which we committed to the Congress last year, are evidence of that initiative.

This year we have a major multiyear proposal before you, the competitive multiyear program for five LSD-41 class ships, which we estimate will save over $246 million with an internal rate of return of over 200 percent, the highest rate of return on any of the multiyear programs we propose this year.

In the area of contracting policy I believe we have succeeded in establishing a uniform approach in strategy toward contracting for ships.

It is not by any means an easy contract that we are implementing with our shipbuilders in many regards. Many of the clauses are as tough as they have ever been. Indeed, reviewing Admiral Rickover's comments with regard to Navy ship contracting, I find that about 6 of his 10 recommendations, in fact, have been Navy policy for the past year and a half.

Senator COHEN. When you say uniformity in contracting procedures, what do you mean?

Mr. SAWYER. For example, the policy has been and continues to be that for the first of the class, what, may be called the developmental ship or prototype, we will use the cost-plus-award-fee type of contract. Depending on the complexity of that ship, we may use that again in the first follow-on, but gradually we want to resolve the contract in later years to fixed-price-incentive-type contracts.

On the simpler type, what I call more commercial-type vessels, we will begin with fixed-price-incentive contracts and in some cases move to a firm fixed price. This strategy is well shown in the major contracts that we have let in the last 2 years and I think has been quite successful.

Senator COHEN. Will you expand a bit more? Give me an example of what you mean when you talk about fixed price.

Mr. SAWYER. I will give two examples: Of the fixed-price-incentive contract, of which I think the best ones are competitively awarded.

For the nuclear attack 688 class submarine, generally we have moved now to a 50–50 share line which means that the contractor and the Government share equally in overruns and underruns, but with a ceiling usually about 130 percent of the target price, beyond which the Government liability ceases.

This is what we call a tight share line; it provides a high incentive to the contractor to essentially better his target objective in that he, of course, receives more fee, considerably more fee, by doing this.

We have used 50–50 share lines also, for example, in our SSL conversion. We have moved there to 50–50 share line on the LSD-41 procurement which this year was a cost-plus-award-fee type of contract. We intend to move the Aegis cruisers this year into a fixed-price-incentive-type contract so that they are fully ready to compete between the two shipyards in this current 1984 procurement.

Senator COHEN. Is it still possible under that kind of 50–50 share line for the contractor to make more profit by going over that fixed price?

Mr. SAWYER. He actually makes less profit as he exceeds his target price—considerably less profit. Some of the share lines we have used in the past, for example, have been 80–20 whereby the 80 percent of the risk is being shared by the Government and only 20 percent by the contractor.

I personally feel to be really effective a fixed-price-incentive contract should be fair, and fair—what is good for the contractor is good for the Government—is 50-50. On a 50-50 share line, if he overruns the target price, his profit quickly erodes. Of course, we are also protected by the cap at which not only profit, but all cost beyond that cap are borne by the contractor.

I think from what we can see of performance to date of the contractors who are under this type of share line it is very beneficial. It does tend to indicate tougher contracts to negotiate because of the contractor is going to want to have some protection. But it is fair. It will only work in those cases, Senator, where you have a rather mature ship.

For example, I wouldn't recommend that we use this type of approach in a first-of-a-kind project.

Let me just say one item with regard to our shipbuilding base. It is a very important issue, one that I feel very strongly about.

Today, of the 110 ships we have under contract, in addition, of course, the Navy now contracts to the private sector a significant fraction of its overhaul and repair business, somewhere in the vicinity of 30 percent.

This work today is providing jobs for about 98,000 private shipyard workers thoughout the Nation which is about 80 percent of the significant shipyard and ship repair facilities and organizations in the country.

In the United States only three deep-draft merchant ships were built last year. The commercial business is absolutely as low as it has ever been, certainly in recent memory, not only in deep-draft merchant ships, but offshore supply and offshore industries.

So, right now we in the Navy find ourselves as being the prop to the nationwide shipyards and, of course, their supporting industries. We have a major study going on now, which we expect will be completed sometime this spring, on the shipbuilding base and what is really required for national mobilization purposes.

We are hopeful that the results of this study which will be disseminated broadly can form the basis for some real policies in this regard. The bottom line is in terms of our performance to date.

Certainly, in the last couple years by the shipbuilders, this overhaul and new construction has been excellent, probably the best it has been in many, many years.

That concludes my remarks, Senator.

[The prepared statement of Hon. George Sawyer, Assistant Secretary of the Navy for Shipbuilding and Logistics, follows:]

PREPARED STATEMENT OF HON. GEORGE A. SAWYER, ASSISTANT SECRETARY OF THE NAVY (SHIPBUILDING AND LOGISTICS)

Mr. Chairman and distinguished members of the committee, I welcome this opportunity to appear before you again, this time to discuss the Navy's shipbuilding and conversion budget request for fiscal year 1984. Your foresight and decisiveness over the last few years certainly has been instrumental in putting this Nation on course toward reestablishing the naval strength our maritime nation requires, the strength represented by our oft-stated goal of a 600 ship Navy. The Navy's program for fiscal year 1984, which Vice Admiral Walters will detail for you, builds on the strong foundation and momentum that the Congress and this administration have established in concert, and moves our Nation closer to realizing the goals that we have previously agreed represent the force levels required to support our national interests.

Not only does this shipbuilding program meet essential naval force level requirements, it also is a vital factor in preserving the shipbuilding industrial base, an industry that, as predicted last year, today depends for its survival almost completely on the naval shipbuilding and conversion program. As commercial work in the industry continues to decline, it is all the more important that the naval shipbuilding program maintain its stability in order to preserve the Nation's industrial base and maintain jobs in the industry for American workers. The importance of the Navy's program in this regard is best illustrated by the fact that in 1982 only three new deep draft commercial vessels were ordered from U.S. shipbuilders, nationwide.

Having obtained congressional approval of our earlier shipbuilding plans, we have moved with dispatch to bring these plans to reality. For example, in 1982 we awarded contracts for construction and conversion of all 32 ships authorized in the SCN account and in the Sealift charter programs. This is the first time in memory that all ships authorized in a given year have been brought under contract before the end of that calendar year. Also in 1982, we took delivery of 25 ships, offsetting the retirement of 14 older vessels, for a net gain of 11 ships. Of the 25 deliveries, 20 were on or ahead of schedule with seven early deliveries against only five late deliveries. For 1983, our projections are even better. We now anticipate 19 of 21 deliveries on or ahead of schedule including five early deliveries, and only two late deliveries. Of the fiscal year 1983 program recently approved, 80 percent of the contract volume already has been awarded, including the largest shipbuilding contract in history, the award for construction of the two nuclear powered aircraft carriers CVN 72 and 73 to Newport News Shipbuilding.

As we accelerate our production plans to meet our essential force levels and preserve the industrial base, we are also moving out smartly in improving our management of the acquisition process as we demonstrate effective stewardship of the taxpayers funds invested in naval forces. Among our principal acquisition improvement actions have been those addressing program stability, competition, multi-year procurement, and pre-planned product improvements.

A cornerstone of our planned naval construction program has been its inherent stability. Program stability allows both the Navy and our industrial base to plan effectively in accelerating ship construction, establishing enhanced competition, and making much needed investments in modern shipbuilding facilities and technology. Your support and approval of the naval construction program over the past several years certainly can be credited for maintenance of that remarkably stable program.

With this stability we have made gains in increasing competition in shipbuilding. We now project that almost 95 percent of the 5-year program will be procured competitively, with only Trident, LHD, and any future nuclear carriers beyond the 5-year plan requiring non-competitive awards. The results of strong competition have already been seen in the recent contract awards for construction of frigates, oilers, sealift conversions, salvage ships, floating drydocks, and service craft.

Particularly gratifying, also, have been those favorable awards that have resulted from early participation by our shipbuildings and their design agents in the engineering process leading to the completion of contract design. As a Navy-industry partnership, we are exploring ways to bring ultimate producers into the process earlier, and we look to the T-AKX, T-AKRX, and T-AO, as current examples of what can be accomplished by earlier competitive producer involvement. Experience has shown that there is no reason why we should not continue to look to industry teams and coalitions of engineering agents, system suppliers, and shipbuildings to help us accelerate the design of naval ships so that we will have producible and affordable design in place when we are ready to procure the ships.

We have seen that small up-front investments in engineering competition among shipbuildings have saved millions of dollars on the construction contracts. We are continuing this competitive shipbuilding involvement on the fiscal year 1984 MSH and PBM programs and intend to expand this approach in our competitive shipbuilding programs in the future.

In my view, strong technical capability and competition, beginning in the earliest design phases, have proven to be the key factors in the continued supremacy of our American aerospace industry. These certainly have been among the keys, as well, to the success of European and Japanese shipbuilders. We now have at hand, the opportunity to infuse a healthy measure of competition into our own shipbuilding industry, both for our immediate needs in the naval construction program and for the long term benefit of the U.S. shipbuilding industry as a whole. Competition brings rewards not only in affordability, it also provides a key stimulus to creativity and conceptual innovation that can lead to improved performance as well. It is our unyielding faith in the competitive, free enterprise system that makes us Americans the economic leaders of the world today.

And finally, I am pleased to report that unlike the very divisive years of the recent past, there are no shipbuilding claims outstanding relative to Navy ship construction or conversion and none have been filed in more than a year. Both the Navy and its ship contractors are concentrating on bringing warships to the fleet on schedule and within budget rather than arguing about these contracts in court.

As I conclude my remarks today and turn to Vice Admiral Walters to give you the details of our fiscal year 1984 program, I would like to thank this committee for its unstinting commitment to reestablishing our Nation's maritime strength. To you and your colleagues must go much of the credit for the progress we have made in articulating our vision of a sound and vital maritime America; we look forward to continuing our work and full cooperation with you as we jointly bring this vision to reality.

Senator COHEN. Admiral Walters?

STATEMENT OF VICE ADM. ROBERT C. WALTERS, U.S. NAVY, DEPUTY CHIEF OF NAVAL OPERATIONS FOR SURFACE WARFARE

Admiral WALTERS. Good morning, Senator. I would like also to present my prepared statement for the record.

Senator COHEN. It will be included in full.

Admiral WALTERS. I will simply summarize very briefly what that statement includes.

Essentially the Navy strategy is the national strategy and we have devised our force levels that form the foundation for our shipbuilding plans to be in concert with that strategy.

In this year's statement I have given you a review of our modernization process as it involves surface combatants, particularly because even though that is not an SCN matter, it is important I think for this committee to understand the relationship of the modernization of current forces as that complements the addition of new forces which we are requesting in the SCN plan.

Our SCN plan does support the balanced forces to deter war, both in the nuclear and conventional sense. It is supportive of the 600-ship Navy objective by 1989. We have continued to push for a balanced force concept including the sealift and logistic forces which are very necessary for the support of both the Navy and Armed Forces in general.

With that, I intend to cover only the major parts of the program, Senator, the ones that I think you and this committee are most interested in. Of course, we are willing to answer any questions you have about any of the other programs. If I omit anything, I can go back to it.

NAVY FIVE YEAR SCN PLAN
FISCAL YEAR 1984-1988
CONGRESSIONAL SUBMISSION

	FY 84	FY 85	FY 86	FY 87	FY 88
TRIDENT	1/1832.1	1/1988.2	1/1926.5	1/2054.2	1/2186.5
SSN-688	3/2042.4	4/2999.2	4/3155.8	5/3849.9	5/4111.3
CVN	—	—	852.4	1092.7	1/3793.9
CV SLEP	95.9	1/794.0	108.2	1/810.1	267.8
CG-47	3/3435.0	3/3519.3	3/3679.9	3/3817.4	2/2822.0
DDG-51	99.5	1/1363.7	161.0	3/3174.0	5/5164.0
DD-963	—	—	—	247.8	1/1096.7
BB (R)	57.7	1/559.8	1/418.4	—	—
LSD-41	1/509.0	2/676.2	2/625.5	2/836.0	2/885.5
LHD-1	1/1379.7	113.5	1/1212.8	125.1	1/1347.3
AMPHIB SLEP	13.8	46.2	1/292.4	3/857.8	3/873.2
LPDX	—	—	—	119.1	1/927.7
MCM	4/381.0	4/350.4	4/365.5	—	—
MSH	1/65.0	—	4/280.0	4/295.0	4/306.0
AD	—	—	—	1/509.0	1/508.8
AE	—	—	1/497.3	1/383.1	1/395.0
AFS	—	—	—	1/449.9	—
AOE	—	—	1/807.9	1/631.9	1/657.0
TAGS (C)	34.5	2/224.1	—	—	—
TAH (C)	1/260.0	—	—	—	—
TAK (C)	.9	1/96.5	—	—	—
TAFS (A)	1/16.1	—	—	—	—
TAGM (C)	—	46.0	1/134.0	—	—
TAGOS	—	2/135.8	2/126.9	2/132.5	—
TAO	3/524.6	4/920.0	4/908.9	4/936.0	4/1045.0
TAKR	4/246.5	—	—	—	—
TARC	—	—	1/397.2	—	—
LCAC	(6) 161.1	(12)266.0	(12)275.0	(12)288.3	(12)306.7
SERV CRAFT	119.3	148.7	199.7	158.0	146.2
LAND CRAFT	15.0	—	—	—	—
COST GROWTH	674.7	—	—	—	—
ESCALATION	375.6	—	—	—	—
STRAT SEALIFT	31.0	34.0	41.0	37.0	31.0
OUT	204.2	238.6	208.8	238.2	317.5
PD	124.2	178.8	119.5	205.2	135.7
TOTAL	12,698.8	14,699.0	16,796.6	21,248.2	27,324.8
SHIP COUNT	17/6	21/5	28/3	28/4	30/3

First, I will present the overview of the 1984 budget in SCN which is for 23 ships, 17 new construction, 5 conversions, and 1 acquisition.

TRIDENT SUBMARINE - SSBN

Mission:

To provide an undersea strategic missile system to ensure that the United States continues to maintain a credible, survivable deterrent, independent of forseeable threats.

CHARACTERISTICS

LENGTH: 560 FT
NAV DRAFT: 36 FT
PROPULSION: Nuclear
WEAPONS: 24 SLBM Missiles, Torpedoes

BEAM: 42 FT
DISPLACEMENT (SUBMERGED): 18, 700 Tons
SPEED: 20+ KTS

FUNDING REQUEST	NUMBER	COST	BUILDER
FY 1984 PROGRAM:	1 SHIP	$1,832.1 MILLION	ELECTRIC BOAT

The first of the ships, of course, is the Trident submarine. We have had a consistent program of one a year of these ships for some time and wish to continue that. As you know, last year the Congress and the Navy agreed to accelerate the D-5 introduction from fiscal year 1985 into the fiscal year 1981 ship and that is being done.

I will point out that the *Ohio*, the first of the new SSBN's, has been highly successful and has already conducted her first patrol.

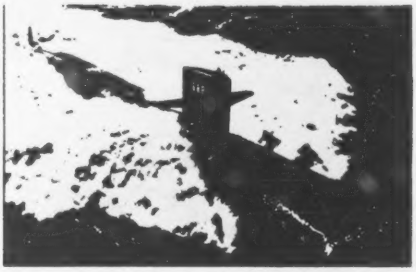
The *Michigan* is in the midst of a successful workup period and will join the deployable forces this year.

We believe the problems of Trident are behind us and we wish to continue this program on the one-a-year basis that we have presented in the 5-year plan.

NUCLEAR ATTACK SUBMARINE - SSN 688

Mission:

To destroy enemy ships, primarily submarines, in order to prohibit the employment of such forces in attack and destruction of U.S. and Allied targets.



CHARACTERISTICS

LENGTH:	360 FT	BEAM:	33 FT
NAV DRAFT:	32 FT	DISPLACEMENT:	6,900 Tons
PROPULSION:	Nuclear	SPEED:	20+KTS
WEAPONS:	Torpedoes, HARPOON, TOMAHAWK		

FUNDING REQUEST	NUMBER	COST	BUILDERS
FY 1984 PROGRAM:	3 SHIPS	$2,042.4 MILLION	NEWPORT NEWS ELECTRIC BOAT

The second of the submarine programs is the nuclear attack submarine, the 688 class. This represents one area which we need to put increased emphasis on, the attack submarines.

As you know, part of our objective in the 600-ship Navy was to increase the attack submarine force levels to 100. In order to do that, we must build more submarines than we have been building in the former years. We need to build 10 every 3 years to get to the new force level objective and to maintain it.

We are showing that kind of increase this year to ask for three ships in the 1984 budget, and our 5-year plan does support at least 10 every 3 years in order to get there.

Senator COHEN. In the next year, fiscal 1985's budget, you have four, is that correct?

Admiral WALTERS. Yes.

Senator COHEN. What is the long lead amount for the fourth ship in the 1985 budget?

Admiral WALTERS. $336 million, total.

Senator COHEN. $336 million?

Admiral WALTERS. Yes, sir. I can make that out for the record, sir.

[The information follows:]

All of the $336 million requested in fiscal year 1984 for SSN-688 advance procurement is for fiscal year 1986 submarines. Advance procurement for four fiscal year 1985 submarines was funded in fiscal year 1982 and fiscal year 1983.

Senator COHEN. What will be the useful life of these new submarines? Thirty years?

Admiral **Walters**. We would anticipate it would be 30 years.

Senator **Cohen**. Is there any flexibility to keep them longer?

Admiral **Walters**. Admiral Fowler might want to address this in more detail, but generally the age of submarines and ships has to be evaluated at some point during the service life where you can assess the stress that they have been subjected to over the years.

I do not know whether it is possible to predict now whether you can extend beyond that 30-year period or not. I will ask Admiral Fowler if he wants to address that further.

Admiral **Fowler**. Senator, we have been extending the life of a number of ships. It is difficult to predict ahead for a new class of ship. We anticipate at least 30 years. As time goes by, we assess that.

We are extending the time between overhauls. We really haven't found what makes the end point in the useful life a ship other than the need to modernize with weapons to meet a new threat. That is the key factor. We would have to wait a number of years in the 688 class.

Senator **Cohen**. You are still building them with a 30-year timeframe in mind, and might make improvements in the future, if possible, to extend the lifespan beyond that 30-year period?

Admiral **Fowler**. Yes, sir.

GUIDED MISSILE CRUISER - CG-47

Mission:

To destroy enemy aircraft, missiles, submarines and surface ships in order to prohibit the employment of such forces against U.S. forces. CG-47 class ships will normally be assigned to carrier battle groups or surface action groups.

CHARACTERISTICS

LENGTH:	563 FT	BEAM:	55 FT
NAV DRAFT:	31 FT	DISPLACEMENT:	9,600 Tons
PROPULSION:	Gas Turbine	SPEED:	30+KTS

WEAPONS: AEGIS Combat System, Vertical Launch System SM-2 MR, 2 5"/54 Guns, TOMAHAWK, HARPOON, TORPEDOES, Close in Weapons System (CIWS), LAMPS MK III Helicopter, CHAFFROC.

FUNDING REQUEST	NUMBER	COST	BUILDER
FY 1984 PROGRAM:	3 SHIPS	$3435.0 MILLION	INGALLS BATH IRON WORKS

Admiral **Walters**. The next ship I would like to talk about is the guided missile cruiser, CG–47. We have had 10 of these appropriated to date. The lead ship, *Ticonderoga,* was commissioned in January of this year, is now operating with the fleet and will deploy this fall. We have an objective of 27 of these ships of which we show 24 in the 5-year shipbuilding plan. These ships are the most advanced AAW ships in the world.

I know there are some questions that this committee has regarding the testing that has been raised in the press. I would only say, in open session, that we have tested this ship, or this system, I should say, at sea for 8 years and ashore under very realistic conditions for 7 years.

We have had hundreds of hours of manned aircraft flying against the system. About 30 or 40 percent of that time has involved active countermeasures which we know is the kind of environment that the ship could be expected to live in.

We have had 65 live missile firings at sea with this system. We have had a full range of target profiles presented against the system from subsonic to over Mach 3, from altitudes that are very low to very high and against targets that are maneuvering, crossing, and head on.

I am prepared to address this in some detail in closed session.

Senator **Cohen**. What about the question of stability? It seems to me that a House report filed last year questioned the stability of this type, indicating it was top heavy.

Admiral **Walters**. Yes, sir, there was a GAO study or investigation, a survey group that investigated it.

I think it is important for the committee to understand how this ship has evolved. This ship is designed based on the *Spruance* destroyer which, as you recall, had a lot of margin in it for growth. From that ship we built four DDT-993 class that were originally built for the Iranians and are all in active service in our Navy.

We gave those ships a tremendous increase in capability, effectively giving them the armament and combat capability of the CGN-38 class cruiser. In that process we used up some of the margin that was left in that ship.

We then examined the way to get the Aegis system to sea and decided to again use that ship as the basic design platform from which to build a new cruiser.

In doing that we have used up more margin in the ship to the point now that we have used most of the margin in the ship that we would want to use at this point in time. This ship is stable. It displaces upon delivery about 9,535 tons.

It has a stable center of gravity and buoyancy reserve and, albeit, the margins are not there that we would design in a new ship if we were starting with a new piece of paper, it does have all the margins left in it to be perfectly safe under the worst conditions which includes an 80-foot hole in the ship, flooding, 15° list in heavy seas with a 35-knot beam wind.

So, we feel the ship is very stable and we are pleased with the performance of the ship thus far. We have verified our figures on two inclining experiments in the shipyard where it was built.

Senator **Cohen**. Senator Hart, do you have any questions?

Senator **Hart**. Admiral, on the armoring of the deckhouse, does this ship have the same bulletproof armor inside the aluminum deckhouse that the DD-963 has?

Admiral **Walters**. The 963 originally did not have any armor. We are now adding that as part of the survivability ship alteration. The CG–47 does in fact and is being built with the armor for fragmentation protection in the vital spaces of the superstructure.

Senator **Hart**. On the computerized fire control system, my understanding is that any such fire control system has a maximum of tracks that it can handle at any one time. How many tracks can the fire control system on this ship handle simultaneously?

Admiral **Walters**. The radar system will handle many tracks total. I am not sure how you are phrasing your question. It will handle the intercept of multiple targets.

Senator **Hart**. What happens to the computer system if that number is exceeded?

Admiral **Walters**. It prioritizes against the threat, and that is common to all of our other systems that use the data processing and computerized tracking system. You prioritize and you drop off the low priority targets as the system becomes saturated.

Senator **Hart**. So in effect it is impossible to supersaturate the computer system.

Admiral **Walters**. Theoretically it should be impossible to supersaturate the system; yes, sir.

Senator **Hart**. Theoretically?

Admiral **Walters**. Yes, sir.

Senator **Hart**. How are the computer radar cabinets for the Aegis system distributed throughout the deckhouse?

Admiral **Walters**. They are distributed among several spaces. The ship was not built with the idea of distribution from, I think, the point of view that we will spread the system throughout the ship for what is called distributed combat system architecture.

It does not follow that concept. The system is located in several spaces, but those spaces generally are contiguous.

Senator **Hart**. Are any elements of the system placed near the outer wall of the deckhouse?

Admiral **Walters**. Yes, sir, there are elements of the system that are placed near the outer bulkheads of the ship.

Senator **Hart**. Is that sound in terms of survivability of the system?

Admiral **Walters**. I think if we had our choice in the way we design ships and could afford the size, that we would prefer to have additional bulkheads between vital spaces and the outside of the ship. As a matter of fact, that is the concept that we are going to follow in the DDG–51.

Senator **Hart**. But you don't have any choice here?

Admiral **Walters**. We don't have any choice here.

Senator **Hart**. Why is that?

Admiral **Walters**. We are constrained by the size of the ship and the capability of armor that we wanted to put in it. There was a limit to the other protection you could provide such as additional space.

Admiral Fowler, do you want to add anything to that?

Admiral **Fowler**. No, sir.

Admiral **Walters**. He is the shipbuilder.

Senator **Hart**. How rapidly can the Aegis radar be turned off and on?

Admiral **Walters**. The Aegis radar has been developed to take into consideration a longstanding deficiency that we have in many of our radars, the fact they cannot be turned off and on quickly and the Aegis has been designed to do that without harm to the radar. It can be brought up and secured from its radiating status almost instantaneously.

Senator **Hart**. That process can be repeated a number of times with no damage to the radar or any of the associated equipment?

Admiral **Walters**. Repeated processes should not cause any damage to the system. It was designed to stand that.

Senator **Hart**. It should not?

Admiral **Walters**. Should not. I am always hesitant to make any absolute statement, Senator, but it should not.

Senator **Cohen**. I wish we could follow that same principle. We are not allowed that freedom.

Senator **Hart**. What has been the highest sea state so far that the CG-47 has encountered in sea trials?

Admiral **Walters**. I don't know, Senator. My initial impression would be about sea state four. That is probably the maximum.

I will provide that answer for the record.

[The information follows:]

To date the highest sustained sea state encountered by *Ticonderoga* is sea state four with intermittent periods of sea state five. As expected, the ship rode well and encountered no problems.

Admiral **Walters**. She not been in mountainous seas yet because she has mostly been operating in the Gulf of Mexico and is now operating in the western Atlantic.

Senator **Hart**. Have you encountered any icing in the sea trials?

Admiral **Walters**. No, sir.

Senator **Hart**. Is that because of where you have been operating it?

Admiral **Walters**. Yes.

Senator **Hart**. What will happen to the ship or do you have any predicted effects on this ship of a combination of high sea state and heavy icing?

Admiral **Walters**. We are certain that the ship is stable under high sea states. Under icing conditions we have built anti-icing equipment in all of the major systems to make sure they will operate under the adverse conditions of icing-type weather.

On almost all of our ships, however, we have to manually remove some ice from the ships.

Mr. **Sawyer**. Could I impose one thing here on ship stability?

I think it is important to understand what a limiting stability margin is, because from the drift of the questions basically, the question appears to be the ships stability in seaworthiness conditions.

U.S. Navy ships have the most stringent design standards in the world with regard to subdivision and stability after damage. The important thing to note is that the CG limit, the margins we are talking about with regard to this ship is not based on an intact stability, but damaged stability. It considers a ship that has two compartments flooded and up to 15 percent of her length essentially breached—and the stability margin is designed assuming the break occurs across a watertight subdivision. She then is subjected to a high-wind condition, above 30 knots, and must be able, after a permanent list of 20°, to right herself. There is no margin put in, as such, in that calculation for icing.

I think the point is, as you can gather, that would be a very severely damaged ship that has to survive under extensive damage conditions.

Obviously, it is by far the most stringent design standard and far outweighs the question of stability of the ship in a high sea state in an intact condition.

Senator **Cohen**. You say if it is under attack and has a hole in it, it still meets your standard and if it is not under attack, it will survive any high seas condition?

Admiral **Walters**. We fully anticipate this ship will be a performer under any conditions in the North Atlantic or in any seas that may be imposed on her.

Senator **Hart**. Even though you haven't done any sea trials under those conditions?

Admiral **Walters**. That is correct. We have not done any sea trials in icing conditions.

Senator **Hart**. And heavy sea states,

Admiral **Walters**. Not yet; no, sir.

Senator **Hart**. When will those be done?

Admiral **Walters**. Those will probably occur during the first deployment. Since we are approaching summer weather, my estimation is that the first really heavy seas, unless she gets caught in hurricane-type conditions this summer, would be on her deployment to the Mediterranean or the North Atlantic this fall when she starts deployment. That is characteristic of conditions under which most of our ships operate.

Rarely do we have any of the new ships exposed on their first trials in the kind of weather that we have designed them for simply because of the local conditions where they operate.

Admiral **Fowler**. We have been so confident of our design parameters over the years that we have never planned to trial a ship under severe weather conditions just to determine whether design conditions were correct.

Senator **Hart**. I hate to be thick about this, but as a layman I have to ask the question.

I take it that the kind of damage hypothesis that you subject the design to represents essentially the same or worse operating conditions than if the ship were intact and operating in the North Atlantic under very heavy sea state and under heavy icing conditions?

Mr. **Sawyer**. Considerably worse.

Senator **Hart**. I have some questions about the DDG-51.

Senator **Cohen**. You can say that your testing procedures would be similar to taking a new aircraft out. During the first trials you don't put it to its limit. You put it through tests of its basic functions without trying to crack the envelope.

Is that essentially what you do with ships?

Admiral **Walters**. We test all the systems to their limit, their machinery, weapon systems and all of that is tested to the limit. But the hull design and stability are not tested to their limits. That just has not been one of our problems because of the safety that is designed inherently into the ship.

Senator COHEN. Do you put it in a model?

Admiral WALTERS. Extensive tests are done on these ships at the David Taylor Model Basin at Carderock prior to the first laying of steel.

Senator COHEN. What kind of testing is that? What does that testing involve?

Admiral WALTERS. At Carderock?

Senator COHEN. Yes.

Admiral WALTERS. They involve testing of the hull shapes and the designs of the ships. Then they are tested under various wind and sea conditions that they can generate in the model basin out there. They have different scales of models they can use.

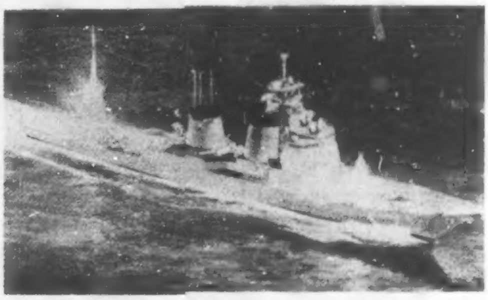
They do put them in the test tank and they can run at different speeds and under different sea conditions. They can generate these kinds of storm conditions that Senator Hart has been talking about.

Senator COHEN. I have some questions also on the Aegis radar system, but we can move on with the overview.

GUIDED MISSILE DESTROYER - DDG 51

Mission:

To destroy enemy aircraft, missiles, submarines and surface ships. The DDG 51 will be employed as a part of a Carrier Battle Group, Surface Action Group, Underway Replenishment Group or Amphibious Group.



CHARACTERISTICS (Tentative pending contract design)

LENGTH:	466 FT	BEAM:	Less Than 60 FT
NAV DRAFT:	20 FT	DISPLACEMENT:	8,200 Tons
PROPULSION:	Gas Turbine	SPEED:	Over 30 KTS

WEAPONS: AEGIS Combat System, Vertical Launch System, TOMAHAWK, SM-2 MR, CHAFFROC, VLA, SEAFIRE /Guided Projectile.HARPOON, Torpedoes, 1 5"/54 gun.

FUNDING REQUEST	COST	BUILDER
FY 1984 PROGRAM:	$99.5 MILLION (Advance Procurement)	TBD

Admiral WALTERS. The DDG-51 is next. This is the ship scheduled as a fiscal year 1985 lead ship. Therefore, this year we are asking only for money for advanced procurement. I know that this ship has had lot of interest in the Senate. I thought that I would discuss it a little bit more in detail without taking too much time, to just give you an overview of where we stand on this ship today.

We have just completed the preliminary design of the ship. I would like to just leave this slide up. It is the ship as it appears today, having completed preliminary design. This ship is immensely important to the Navy because we have gone through a period of several years in which we have built a lot of frigates.

We have essentially now under construction and authorized by the Congress those frigates necessary to provide our force level objectives. So, we need now to be building battle group capable destroyers to replace over 30 destroyers that will reach their 30 years of age starting in 1989 and then rapidly going through them in the next 2 or 3 years.

Those are the ships of the DDG-2 *Adams* class and *Dewey* class, the DDG-37 class. There are 34 of those ships, 29 of which have not been modernized to the point nor would the ships in general sustain the kind of modernization at that period in their life to permit them to continue to be modernized.

The DDG-51, therefore, is very essential to maintaining the carrier battle group capable ships that we need to keep the full capability of destroyers; this is, the ASW and AAW surface warfare aspect to serve not only the carrier battle groups, but the surface action groups, to operate with amphibious forces and replenishment groups or as independent units, as these ships would be capable of with their three-dimensional capability.

The CNO's priority on this ship since it has been under development has been consistent in support of combat system capability first, with speed and endurance being a factor because many of these ships will operate with the carriers and some of the carriers being nuclear have high speed and endurance and we have to design a very capable destroyer to stay with it because we do not have sufficient nuclear capable escorts to go with these carriers.

So, speed and endurance in these new ships are important.

Survivability is an important factor. That has been addressed by Senator Hart's questions. As a matter of fact, it has been of concern in the Congress for several years regarding what we are doing in survivability, to improve the survivability of the ships.

We have specifically made that a very important part of our priorities in the design of this ship.

Habitability, of course. We have to keep the ships habitable for our sailors because they live in them, and finally, to provide design flexibility, but flexibility for future growth has been less than combat capability in our priorities.

There have been several issues that have come up in the past years that I have briefed you about on this ship, but fundamentally we have not changed the ship a great deal from what Secretary Lehman informed the Senate last year that the ship would be.

I would like to briefly go over those changes that we have had.

We are looking at the collective protection system which is the positive pressure you put on the inside of the ship to keep chemical, and biological, and nuclear contamination out. We are still looking at that. That is on the basis of whether it should be a full system, to include the engineering spaces or partial system that would include all the people and the primary control functions.

Either way we would design it, it would be on a full-time basis. Whatever you design in the ship would be used full time, 24 hours a day, 365 days a year. The question is how many of the spaces in the ship we want to cover. We are still examining that. We have made no changes to the survivability factor, the blast protection, EMP protection, shock factors, or any of that sort of thing.

We have not changed the combat suite. It still has the SPY-1D radar. It still has useful cells of vertical launch system for missiles. It has a gun. We have now made the decision on one of the controversial issues of last year, whether or not we are going to pursue the guided projectile and the Seafire system.

The guided projectile is being placed under contract now and we are preparing an RFP to go competitive for the procurement of Seafire. So, those concerns have been addressed and are included in the base line design of the ship.

We have decided again that Racer, which is one of the energy efficiencies that we want in our ships, is not ready for the lead ship, the DDG-51.

We have a well-funded, well-planned development program for the Racer system, which is an energy conservation part of the main propulsion gas-turbine plant, and we expect that program to proceed and to be tested both ashore and at sea. At such time as it proves to be effective and we can realize the efficiencies that have been advertised for it, then we are prepared to put it in the second flight of these ships.

Outside of that the ship remains as presented to you previously. It is shown here with the general characteristics that could be expected to change only slightly as we enter the contract-design phase.

I think it is important also to understand that we have been very cost conscious on this ship because, unlike the cruisers that have specific missions to perform, the destroyer is more of a general-purpose ship that is used throughout the Navy for a lot of missions.

We need a minimum of 29 of these to replace the ships I mentioned earlier. So it has to be an affordable ship. So, we have been very cost conscious in the way we are going about it and we intend to be that way.

At this stage of the game we think we can produce a ship that will be 30 percent less costly than the CG-47. People have questioned that: "Why do you think you can provide this kind of capability and have it 30 percent less?"

DDG 51 AS COMPARED TO CG 47

Equipments/systems evolved from current inventory.
AAW: Fewer illuminators, smaller radar, and fewer missiles.
ASW Helo deck vice embarked unit: Six vice 48 torpedoes.
ASU/strike: 1 gun vice 2 guns and larger strike MSL loadout.
Battle group participant vice control.
No staff accommodations.
Lower cost (700m vs 1091m fiscal year 1983 dollars follow ship).
Displaces less (8,200t vs 9,600t).
Less manning (336 vs 361).

For that reason I would like to throw up a comparison between the CG-47 and the DDG-51. We are building here a destroyer, not a cruiser. You can see from the profile below that this destroyer is considerably shorter, it has a lot lower profile, which is good from the standpoint of detectability.

It is a much smaller ship. It has in the anti-air-warfare system one less illuminator. It can handle less targets. It cannot handle as many simultaneous intercepts as Aegis. Its radar is smaller and we have done away with some of the redundancy in the other system. It is all housed in one deckhouse instead of two.

We have still retained a good AAW capability. There are 30 fewer missiles in the ship, but that is to be expected. In the ASW capability we have provided only for a flight deck to handle Lamps III helicopters rather than a hangar because we feel if we provide the capability to refuel a helicopter and control it, which this ship will have, that there will be sufficient assets on other ships carrying more than one helicopter to keep helicopters employed by this ship.

Otherwise it has the full ASW capability of the cruiser, the towed array and active sonar, torpedoes, and vertical-launch ASROC.

As far as gunpower is concerned, it has only one gun versus two on the cruiser. We have done away with the gunfire-control system in the cruiser and are taking care of the gunfire-control problem in the Aegis system. So, that saves space and weight and cost.

This ship is a participant in a battle group, not a leader. The cruiser is a leader. It will sometimes carry the commander who will be a warfare coordinator. This ship will simply take its order and fight the battle as it is told. Therefore, you have less accommodations. You have no accommodation for the staff, you have less communications because the staff people won't be onboard to require communications.

All these combined result in lower displacement, a shorter ship, lower profile, less manning, therefore less costly. As I said, our target is to procure this ship for 30 percent less than the CG-47.

Senator COHEN. Less capable than a cruiser, but more capable than a frigate?

Admiral WALTERS. That is correct. Much more capable than a frigate and a little less capable than the cruiser.

Senator COHEN. Senator Hart.

Senator HART. Admiral, you said the DDG-5 will carry 32 fewer missiles.

How many missiles does that leave?

Admiral WALTERS. I did not understand your question. I said 30 fewer missiles.

Senator HART. How many does that leave?

Admiral WALTERS. This ship will have cells that will contain 90 employable missiles versus for the cruiser it is about 120.

Senator HART. My understanding is that one of the things the British experienced in the Falklands is that they ran out of missiles very fast.

Is that true or not and if it is, how does that affect the number of missiles that this ship ought to carry?

Admiral **Walters**. We are always concerned about magazine capacity and we have been for a number of years. This ship's magazine capacity is sized for the kind of contribution we would expect it to be able to make under heavy fire, being a supporting ship with others in a group. We think the magazine capacity matches the fire-control capability we have given it.

Senator **Hart**. Admiral, can you tell me how many other destroyer classes are currently in production or projected worldwide that do not have any helicopter hangar?

Admiral **Walters**. I will have to provide the answer for the record, Senator. I do not know.

[The information follows:]

DESTROYERS WITHOUT HELICOPTER HANGARS

Currently there are two types of destroyers under construction worldwide which do not have helicopter hangars.

These are the Chinese "*Luta*" class and the French "*Georges Leygues*" anti-aircraft destroyer class.

Senator **Hart**. Would you suspect there are any?

Admiral **Walters**. Yes, sir, I suspect there are some, but I can think of several who do have helicopter hangars.

Senator **Hart**. Without a helicopter, what ASW weapons will this ship have that outrange the torpedoes of the Soviet submarines?

Admiral **Walters**. Without the helicopter capability it will not have any which will outrange the longest range Soviet torpedoes. It will have vertical launch ASROC which will be a standoff capability essentially.

It will depend upon the control of the LAMPS helicopter to make long-range attack.

Senator **Hart**. But standing by itself, the Soviet submarine in effect can pick it off?

Admiral **Walters**. This ship will generally always be in company with another ship, either a DD–963, or CG–47, or something that is going to have helicopters.

The problem we have had in the past is that we have more helicopter hangars than we have been able to get helicopters to fill them.

We have recognized that here, hoping if we fill our other hangars, we will have enough helicopters for this ship to be able to operate. We have built, for example, the DD–963 that can carry two. FFG's can carry two. We don't even have one for most of them.

Senator **Hart**. Words like "always" bother me. I don't hold myself out as any kind of a serious student of naval warfare, but it seems to me the sea battles I have read about indicate considerable chaos when the fight occurs and the best laid plans usually don't get carried out, and the ships get scattered.

You talk about these ships being always in the company of some more capable ship, I think that is a little grand, isn't it?

Admiral **Walters**. Perhaps I was guilty of using the absolute which I was avoiding before. Generally, destroyers do not operate independently. They operate in pairs.

Senator **Hart**. I understand, but operating plans get confused in battle, do they not?

Admiral **Walters**. I will add this ship can carry a LAMP helicopter. It simply does not have the hangar facility to maintain it on a long-time basis.

Senator **Cohen**. Is that because you had to hold the cost down?

Admiral **Walters**. Yes sir; we had to make some compromise and that was one.

Senator **Hart**. Even so, the total program cost is in the range of $100 billion?

Admiral **Walters**. No, sir; we are talking about 30 ships. In outyear dollars, we will run in the neighborhood of $1 billion or so. We are talking about a $30 or $40 billion program for the total program rather than $100.

Senator **Hart**. My understanding was that the full class was to be 60 ships last year?

Admiral **Walters**. No, sir; we are talking about 29 ships right now.

Senator **Hart**. The Navy never requested 60?

Admiral **Walters**. There has been some confusion regarding this class of ship versus our overall surface-combatant requirements.

If you examine the full requirements for surface combatants to fill our total objective to support 15-carrier battle groups, 600-ship Navy, we need 60 new ships.

We feel that the 29 ships that we have planned in this class which will take us through a building period to about 1994 or 1995, by that time we will want to build the other 30 or something else.

Senator **Hart**. What is that something else?

Admiral **Walters**. We don't know yet, Senator, but generally we feel that by the time this class is well under construction we will be a lot smarter about what the threat is, what we need and that sort of thing.

We are not planning more than about 30 ships in this class.

Mr. **Sawyer**. I would like to make one comment with regard to this question of cost because I don't want the record to stand that it is a $1 billion ship we are planning to build here.

The Secretary, in conjunction with the CNO, has set affordability constraints on this ship and we intend to compete the contract. In terms of the follow ship cost, that is, considering the production run—which is probably the best way to look at it—the ship we are talking about has a target cost of $700 million in 1983 dollars.

Senator **Hart**. In then-year dollars it is closer to $1 billion?

Mr. **Sawyer**. In then-year dollars it depends on what the inflation will be in the outyears. On the lead ship we are holding a target of $1,100,000,000 in 1983 dollars.

Admiral **Walters**. It was in then-year dollars that I made my answer. Of course, it is always a guess as to what inflation will run.

Senator **Hart**. What ASW weapons will this ship have that will outrange the SSN-7 missile of the Soviet Charlie class submarine?

Admiral **Walters**. Only employment of the LAMPS weapon in ASW.

Senator **Hart**. Which is not this ship, but the ship it will be traveling with?

Admiral **Walters**. Yes, sir.

Senator **Cohen**. Let me ask you, Admiral, if the design is not final and the builder is not selected, what will be the impact of reducing the amount that you have requested, 99.9? You haven't let the contract yet, you have not selected the builder?

When do you expect to have the design?

Admiral **Walters**. We expect to have the contract design complete early next year. So that the selection of the contractor would occur next year.

Senator **Cohen**. What is the design, $99.5 million going to be used for?

Admiral **Walters**. That will be used for Aegis components and for detailed design. The other thing is the preproduction cost of the UYK-43 computer which is a new computer, which is the new Navy standard computer; this is the lead ship that that computer will be utilized in.

Senator **Cohen**. You mentioned the Aegis system. That brings me back to the question, what would be the objection to having a competitive bid on the Aegis radar?

Admiral **Walters**. I think that it should be examined and I believe the Navy is going to undertake that examination.

Senator **Cohen**. Right now we have one signed contract?

Admiral **Walters**. For the Aegis: yes, sir. We have one prime contractor selected several years ago.

Senator **Cohen**. You said you would use the radar system on the Aegis cruiser and on the DDG-51. It seems to me that is a lot of money to go into one contract.

Admiral **Walters**. That is correct.

Senator **Cohen**. Generally speaking, since you are moving into competition for building the cruiser and destroyer, it makes sense to have competition with the rather expensive and essential radar components.

Mr. **Sawyer**. Let me answer that.

Not necessarily.

Senator **Cohen**. You mentioned earlier how much we have progressed since we have introduced competition in the shipbuilding program.

As you know, Frank Carlucci, who has now departed, and this committee and other subcommittees in the Senate, principally Government Affairs, insist on competition in contracting.

The result so far seems quite positive.

Mr. **Sawyer**. We have major second-sourcing initiatives underway on such complex systems as Tomahawk and Harm missiles.

We are talking here about a very complex weapon system, one that is still under development. This SPY-D1 radar, which is the cornerstone of linchpin of the Aegis system in DDG-51, is a lightweight variant of the SPY-1B, which just now in the 1984 program, will be introduced, in the Aegis cruisers.

So, it is a question of when and how we might develop a second source for Aegis. Much as I think we second sourced the ships at about the right time, considering that we are getting up to the ninth of a kind being built in one shipyard, the ship in terms of its stability of design had matured far enough so that it became logical to consider developing a second source.

You notice even under that condition there is some additional money for start-up costs involved, which is part of this current authorization request before you.

Senator COHEN. In the field of electronics, though, we continue to say that we are making improvements which you are making every day. You may reach the point where you will never have a second source.

Mr. SAWYER. That is true. It is an extremely difficult, complex problem. As Admiral Walters indicated, we are going to take this matter under serious study.

We have handled such difficult problems in terms of second sourcing on other programs, particularly missiles. But when and how is something I would still like to be able to defer until the completion of that study, sir.

Senator COHEN. While Senator Hart is still here I thought we might move on to the *Nimitz* class carriers since that is part of your presentation, because there has been some debate, there has been considerable debate in the past several years, and I expect there will be debate this year before the full committee and certainly on the Senate floor in terms of either delaying or canceling the two aircraft carriers.

What I would like to know is what would it cost us to do so, and what are the important considerations?

Admiral WALTERS. From the standpoint of operational——

Senator COHEN. Where are we in the procurement cycle right now?

Admiral WALTERS. We are under contract for two aircraft carriers. About $3½ billion are obligated to the prime contractor.

Mr. SAWYER. If you don't mind, I would like to handle that question, Senator.

Senator COHEN. I was going to ask you, Mr. Sawyer, because you indicated in your opening statement that even more than the $750 million may be saved as a result of the decision to go forward with the contracting for the two aircraft carriers.

Mr. SAWYER. Let me deal with that first because there is an inflation adjustment, as you notice in the 1984 program, for the two CVN's that basically reflects the changing estimates of outyears inflationary indexes between last year and this year.

Based on the new indexes, the $750 million saving is estimated to be something in excess of $800 million. I think the point here is that it is primarily savings in inflation due to, of course, to the earlier delivery.

Where we stand in the contract status is that we have executed a shipbuilding contract with Newport News the latter part of December of last year for $3.14 billion in terms of obligations.

We have also obligated an additional $1.4 billion in outyear escalation under that contract. At the current time, looking at the shipbuilder portion of the contract, we need to look at essentially two blocks: the contract for shipbuilding and equipment that is provided by the shipbuilder, and also the Government-furnished equipment that we provide to the shipbuilder for installation.

In terms of the shipbuilder's scope of supply, he has already awarded to over 600 subcontractors, in 30 of the 42 States where this work will be conducted, over $550 million worth of orders for contractor-furnished equipment. This includes over 18,000 tons of steel, several thousand tons of which have already been received and are in various stages of fabrication and assembly at Newport News.

In terms of Government-furnished equipment, the Government has already let, as of the beginning of this month, over $1.4 billion worth of Government-furnished equipment contracts to more than 80 major contractors and subcontractors.

What we are saying here, of course, is that that is about $4.5 billion already continually obligated, and looking ahead over the next few months we see another $400 million worth of contracts about to be worked.

The bulk of the work has already been placed under contract and obligated other than that relating to actual labor in terms of fabrication and assembly.

Senator COHEN. What are the contract liabilities on cancellation?

Mr. SAWYER. We have no special cancellation provisions as such other than the normal DAR clause; that is, the defense acquisition regulations clause for termination for the convenience of the Government.

It is important to recognize that we have essentially an inseparable, indivisible single contract for two carriers. So, if it becomes necessary to excise one carrier from that contract, we are talking about a major issue in terms of negotiation which will undoubtedly go to claims and counterclaims and, in my opinion, undoubtedly to litigation, just due to the magnitude of the effort that is involved.

Now, regardless of one's individual opinion, I think in the Navy shipbuilding program there is one thing that all will agree to who are familiar with shipbuilding, and that is the importance of a stable program.

We send a signal out when we let contracts, and we expect our contractors to perform. Indeed, both implicit and explicit in the whole concept of these savings and carrier early delivery of up to 2 years, is that when we decide to do something, we mean to do it and we expect our contractors to do also what they say and what they write they will do.

Having made this commitment, if we then at this stage attempt to terminate it or divide it, it will in my opinion, poison the well and the relationships between the shipbuilding industry of this country and the U.S. Government; and it will take years to recover.

It will make the era of the seventies look somewhat benign.

In addition, of course, we will be faced with immediate additional costs on the remaining carrier, if there is a remaining carrier, that is in the contract of interest for CVNS 72 and 73.

But significantly, it also will mean a stretch-out inevitably in construction of the *Roosevelt,* CVN–71, which currently is at 42-percent completion, marching toward a 14-month early delivery and all systems looking good. There is no question in my mind that the contractor will be faced, due to the major impact, contract termination would have on his backlog, with beginning to stretch that program.

We, of course, will also lose the savings that we have been talking about on the instant contract.

In addition, if one postulates a total termination of both carriers, and somewhat abruptly made, we will certainly see that action reflected in increased cost in other work performed for the Navy by this same shipyard, in terms of higher overhead, higher burden applied to the overhaul work and new construction submarine work that we have ongoing at Newport News.

I think the bottom line in all of this, which I trust has not taken too long, is that we are committed up to our ears on this program.

Senator COHEN. Mr. Sawyer, we have two conflicting positions. One that Congress cannot bind, does not possess constitutional power to bind, future Congresses.

On the other hand, as a contrast, the Navy cannot be expected to operate on the basis of a contingent course of action by future Congresses either.

In essence, they have decided, based on last year's decision by Congress, to go forward to procure two aircraft carriers, to do it full steam and try to complete the program.

Is that essentially it?

Of course, this is predicated on the concept that the Navy is still committed to the need for two aircraft carriers.

Admiral WALTERS. Absolutely, yes, sir. We presented the case last year on the need and that has been reinforced by the events of the past year.

Admiral FOWLER. Senator, if I may, in the early sixties we changed from the end cost concept of budgeting to one of full funding. We did have full funding for these ships in the 1983 appropriation.

Senator COHEN. A contractor cannot be expected to hesitate based on what might take place in future years. If he is going to produce the ship according to the designs and specifications and cost that are laid out in the procurement contract, then he can't be concerned or should not be concerned about whether or not to slow down, to hesitate, according to what a future Congress might do.

Mr. SAWYER. That is correct.

Senator COHEN. Senator Hart.

Senator HART. I have no questions.

I think history will have to judge whether 15 aircraft carriers are enough. I can understand the administration wanting to commit itself up to its ears so that some future Congress would not have the option of changing its mind, but that is a political judgment rather than a military judgment.

I expect that if the contingencies occur that is used to argue the case for large carriers we will find that we don't have enough carriers and someone will have to answer for that.

Senator COHEN. Senator Wilson.

Senator WILSON. I apologize because other commitments made me late.

Mr. Sawyer said something about poisoning the well between the Navy and the shipbuilding industry.

Mr. SAWYER. We were discussing the question of what would be the impact of terminating one or both of the carriers that were authorized and appropriated in the fiscal year 1983 program and which are now under contract.

I am not exactly sure when you came in, but I was referring to the very, very significant impact this would have, not only on an actual dollar basis, because we are committed to over $4.5 billion worth of contracts and subcontracts at the current time, but one of poisoning the relationships between the shipbuilding industry and the U.S. Government, which just recently have come out of that rather difficult time of the seventies.

Senator COHEN. What I would like to do is give Admiral Walters time to go through the balance of his presentation and then have questions before we go into closed session.

Senator QUAYLE. Is there any ship in the 600-ship Navy that is not under contract?

Mr. SAWYER. Yes, sir. The ships that we are proposing in fiscal year 1984 and there will be ships that will be coming forward in fiscal year 1985, fiscal year 1986 and fiscal year 1987 that will all be in terms of counting toward the 600-ship objective by 1990.

Senator QUAYLE. So there are some ships that are not under contract in the 600-ship Navy outlined in 1981, I believe?

Mr. SAWYER. Yes, sir.

Senator COHEN. Admiral Walters, why don't you proceed.

BATTLESHIP REACTIVATION - BB(R)

Mission:

To conduct prompt and sustained combat operations at sea, worldwide, in support of national interests.

CHARACTERISTICS

LENGTH:	887 FT	BEAM:	108 FT
NAV DRAFT:	38 FT	DISPLACEMENT:	58,000 TONS
PROPULSION:	212,000 SHP	SPEED:	30 + KTS

WEAPONS: 9 16 Inch guns, 12 5 inch guns, 32 TOMAHAWK, 16 HARPOON, 4 Close in Weapons Systems (CIWS)

FUNDING REQUEST	COST	BUILDER
FY 1984 PROGRAM:	$57.7 MILLION (Advanced Procurement)	TBD

Admiral WALTERS. The next one we would like to discuss is the battleship reactivation, because this program was disrupted last year by not gaining approval for the third ship of the reactivation of the four.

So, we are proposing in this budget the activation of the third battleship and requesting long lead for $57.7 million. The bulk of that goes into the Tomahawk and Harpoon weapon systems and electronics that are required to support the activation.

We feel that we have demonstrated our ability to reactivate the battleship on schedule and within cost in the *New Jersey*. The *New Jersey* has not met her schedule and we expect her to be deployed to the Western Pacific early this summer. We are quite pleased with the results we have had on that ship.

Senator COHEN. What about the *Iowa?* What is the status of that ship of reactivation?

Admiral WALTERS. The *Iowa* has completed the first phase of her reactivation in Avondale where she went through the drydock stage where underbody work was done.

She is currently in the Ingalls shipyard in Pascagoula where she is now starting the major part of reactivation. We will be getting this ship delivered about 6 months ahead of schedule and cost within the budget.

Senator COHEN. What are your cost projections for the third one?

Admiral WALTERS. The cost projections for the third one with the long lead of $57.7 million, the full funding next year is $559 million less long lead. So, it is about $440 million in fiscal year 1985.

Senator HART. $440 million for this ship?

Admiral WALTERS. Yes, sir.

Senator HART. Does that include all the cruise missiles?

Admiral WALTERS. That includes the reactivation of the ship, modernization and all the cruise missiles and the weapons systems.

Senator HART. So-called phase two?

Admiral WALTERS. No, sir. It does not include phase two. Just phase one.

Senator HART. My recollection was that the deal that was sold to the Congress was $350 million for phase one?

Admiral WALTERS. That was on the *New Jersey*. It was $326 million.

Senator HART. What is the difference about the *Iowa,* or which one are we talking about?

Senator COHEN. This is the *Missouri.*

Admiral WALTERS. The only differences we are talking about are two. One is simply the escalation or inflation between the years that they originally started.

Senator HART. The inflation has gone down.

Admiral WALTERS. Inflation rate has gone down. There has been inflation since 1981 or 1982 when we first started, first proposed this program.

Senator HART. I may be obtuse, but I missed the distinction. Inflation has gone down, but inflation has gone up?

Mr. SAWYER. Rate of increase has gone down. We are now talking in terms of shipbuilding, 4 or 5 percent per annum as opposed to one time when it was up to 11 or 12, but it is still a plus factor.

Senator COHEN. The *Missouri* was never given the same projection as the *New Jersey* or *Iowa.* This ship is not in the same condition as the *New Jersey* or *Iowa.*

Mr. SAWYER. That is correct.

Admiral WALTERS. That is the difference. To put the ships in the proper perspective from the standpoint of comparative cost and recognizing their different years, the *New Jersey* was a 1982 ship for $326 million. The *Iowa* was a 1983 ship with a total cost of $385.3 million.

The *Missouri* would be a 1985 ship for $504 million. I did not do my arithmetic quite right. The major difference, though, aside from that in the *New Jersey* and the *Missouri* or for that matter the *Iowa,* was that some modernization was done on the *New Jersey.*

So, it was a less expensive process and that is why we picked the *New Jersey* first—because she was the most modern of the four.

The *Missouri* and the *Iowa* and the *Wisconsin* were never modernized at all after they were put out of commission in the midfifties.

Senator HART. I know you have no control of your supporters on the floor, but I think if you went back and looked at the Congressional Record, you would find it is replete with figures much, much less than that on behalf of those who were pushing the financing of this program in the Senate. That is my clear recollection.

Senator COHEN. I would like to take issue with that. My understanding is that when it was presented to the subcommittee the *New Jersey* was the focal point, $326 million, on which we asked the Secretary of the Navy to sign that pledge in blood that he would produce that ship at that cost.

But with respect to the *Iowa* and the *Missouri*, they were never projected at $326 million, but rather it was recognized they would cost more.

Senator HART. Is it the chairman's recollection of the debate on the floor that it was less?

Senator COHEN. The debate focused principally on the *New Jersey*. I did not bring up the *Missouri* last time during the course of the debate on the floor.

Senator HART. Refresh my memory then because my recollection was that we authorized two one year and two more the next. Is that correct?

Admiral WALTERS. They were one a year, Senator.

Senator HART. After the first year we never talked about numbers and cost?

Senator COHEN. As I recall, we left it for the Secretary of the Navy to demonstrate an ability to bring out *New Jersey* within cost. There was considerable speculation as to whether or not he could reactivate the *New Jersey* at that figure. We said prove it to us. If you can prove it to us, that will lay the foundation for whether we can approve bringing the others out.

They met it. The next question became, what do we need to do with the *Iowa*? Does that take more work? And it does. Does it take more work for the *Missouri*? And it does.

We will try to meet the same figures you put on it and we will try to hold you to that rather than getting into a $300—you may recall, for example, on the aircraft carrier originally they had projected $300 million for reactivation and within a 6-month period it jumped to $500 million.

The same sort of skepticism was leveled at the battleship. We said prove it to us. Bring it in at $326. If you do it, at least you have created a climate in which we can accept the veracity of the figures you bring to us on the next ship.

I never was under the impression they were going to do every ship for $326.

Senator **Hart**. I understand that. The floor debate on the second and following battleships always had these higher figures in them?

Admiral **Walters**. They have always been higher than $326; yes, sir.

They changed each year as we got different inflation rates that we had to apply. They have changed somewhat this time over last year because we have slipped the later two ships a full year each.

Senator **Cohen**. For the record, I think what we will do is request that you furnish us with the estimates that you supplied to the committee last year.

[The information follows:]

FISCAL YEAR 1983 BATTLESHIP ESTIMATES

The fiscal year 1983 shipbuilding plan requested the following amounts for battleship reactivation.

Fiscal year:	*Millions*
1983	$417.4
1984	480.0
1985	354.7

Senator **Hart**. I don't doubt the Navy submitted those figures.

What I doubt is that the Senate focused on those figures in the debate on the floor, that is all.

Senator **Cohen**. Let me state from my perspective what I have looked at is a test of the Secretary of the Navy's ability to hold the figure that was pledged by the Navy. There was concern with cost growth, with underestimation, what it would cost to overhaul such a ship.

We said prove to us you can do the job with this amount of money. At least it will lay a foundation to bring in a cost projection for $400 million, $504 million on this one. At least we can accept the accuracy, credibility of those figures and not come in 2 years later with a $1 billion program for that ship. This was the understanding of reason for the pledge.

Admiral **Walters**. We want to renew our battleship reactivation program. That is all I have to say.

I am not going to discuss amphibious ships because I am aware of your past support of these ships, so in the interest of time, I will pass those and go to the minesweepers.

I think it would be worthwhile for me to explain our overall concept of how we are building a mine-countermeasure force, just briefly.

CAPABILITY OF EACH PLATFORM

MCM (high mix): Mine hunt and neutralize to [deleted]; influence sweep system; mechanical sweep to 1,500 ft; and forward deployable.

MSH (low mix): Hunt and neutralize to [deleted]; non-deployable coastal ship.

MH-53E: Hunt with side scan sonar to 180 ft; influence sweep systems; mechanical sweep systems; mechanical sweep to 1,500 ft; and deployable in C5A or amphibious ships.

We have looked at it from the point of view that we were remiss in the past 25 years in modernizing this force. Having to overcome a lot of neglect, we have to do an affordable plan that has the capability to do the kind of thing that we think needs to be done in the mine-countermeasures area and to do it relatively promptly because our 25-year-old wooden hull ships are not going to last much longer and they don't have the capability for the modern mine.

We looked at it from the point of view of expecting our allies to do everything that they can to take care of their own mining problems. So, we do not anticipate helping our allies to clear mines from their ports.

We do have a responsibility to be able to clear mines from U.S. ports. We do have, we feel, a responsibility to clear mines from certain areas of the world which will be of great interest to us in operations, whether it be at a choke point, the naval base at Subic, Philippines, or some amphibious objective area.

We have done it on the basis of let's get the least number of the best kind of capability that we can get to do those jobs. So, we have decided on a mine countermeasure program consisting of three parts.

MINE COUNTERMEASURES SHIP - MCM 1

Mission:

To hunt, neutralize and sweep mines in CONUS waters, choke points and overseas areas.

CHARACTERISTICS

LENGTH:	217 FT	BEAM:	39 FT
NAV DRAFT:	10.4 FT	SPEED:	14 KTS
PROPULSION:	2,280 SHP	HULL:	Wood/GRP

EQUIPMENT: Mine Hunting Sonar SQQ-30, Mine Neutralization System (MNS), Precise Navigation System AN/SSN-2

FUNDING REQUEST	NUMBER	COST	BUILDER
FY 1984 PROGRAM:	4 SHIPS	$381.0 MILLION	PETERSON MARINETTE MARINE

One is what we call a high mix ship which is an MCM. That is able to mine hunt and to neutralize mines. It will have all of the mine countermeasures capability that we know how to produce today for the most sophisticated kind of Soviet mines which run the full gamut.

It will be able to do mechanical sweep. It will be the kind of ship that we can deploy overseas to take care of choke points, Subic Bay, or amphibious objective areas.

We have determined that the minimum of those ships is 14. To go with that we have determined a requirement for in the neighborhood of 44 helicopters. Those helicopters are highly mobile and they can do a quick sweep job in many areas of the world because we can move them easily. They hunt with side scan sonar.

They can also do influence and mechanical sweeping. Of course, they can be either flown to certain areas, carried in amphibious ships or even flown, if the emergency is such, in C-5A's to take care of overseas requirements.

The final part of this three-way mission is a less capable, smaller minesweeper which will operate purely in U.S. ports, is never intended to be sent overseas or to do the job for amphibious landings or that sort of thing, but is required in our own port areas. It is designed to be able to hunt and neutralize to the 50-fathom curve which is the bulk of the east coast.

Senator COHEN. How many of those helicopters?

Admiral WALTERS. Seventeen. You have 14 of the high mix, 17 of the low mix, and 44 helicopters.

Senator COHEN. What is the cost comparison between the MSH and MCM? What is the difference between the high and low?

Admiral WALTERS. The MCM lead ship, as I recall, was about $100 million. Our cost objective, again a target on the MSH, the smaller one, for a lead ship is $65 million.

Senator COHEN. What is the difference in capability?

Admiral WALTERS. The difference in capability is, (*a*), the depth at which it can hunt mines and (*b*) the different kind of sweeps they will be able to carry.

MINESWEEPER HUNTER - MSH 1

Mission:

To hunt and neutralize alll types of mines in CONUS coastal waters and the approaches to CONUS ports.

CHARACTERISTICS

LENGTH:	150 FT (EST)	BEAM:	TBD
PROPULSION:	TBD	DISPLACEMENT:	470 Ton (EST)
SPEED:	TBD	HULL:	Wood or Grp or Combination

EQUIPMENT: * Mine Hunting Sonar, SQQ-30 (Variant). Mine Neutralization System (Variant)
Precision Navigation System AN/SSN-2

* Equipment down sized for coastal mission.

FUNDING REQUEST	NUMBER	COST	BUILDER
FY 1984 PROGRAM:	**1 SHIP**	**$65.0 MILLION**	**TBD**

The MSH will only be able to carry one kind of sweep gear at a time.

Senator COHEN. What is the depth again?

Admiral WALTERS. The depth is the difference.

Senator COHEN. You mentioned our allies being responsible for their own shores and ports.

Where do you intend to get these ships? Do some of our allies build the ship you are looking at?

Admiral WALTERS. Yes, sir; we have looked very carefully at what our allies are doing because they have been active in the mine-countermeasures business all the time we have been inactive.

There are two specific ships that are of interest to us, the *Lerici* which is an Italian minesweeper and the *Tripartite* which is built by the consortium of France, the Netherlands, and Belgium.

Both of those craft are of the same size and capability roughly that we are looking for in the MSH, and are very nicely designed ships.

The *Lerici* utilizes a glass-reinforced-plastic process which we are rather interested in. We do not have the capability to do that in the United States on that size of ship.

Senator COHEN. What is the cost of that ship?

Admiral WALTERS. I would have to provide that for the record.

Mr. SAWYER. It is about $55 million if you were to buy one as built. So, we are led to believe in discussions with the Italians.

Admiral **Walters**. I would say, however, that some of the equipment that they have would not meet our requirement. There are two or three pieces of equipment that we have in the United States and most of our allies agree with us, that are far better equipment that we would want to put on it.

Mr. **Sawyer**. We will stretch the program with regard to MSH which we think will allow us to take advantage of the technology which has been developed and the experience which has been developed in Europe particularly and specifically with the *Tripartite* ship and Italian *Lerici* class.

We notice they are participating in the current competition that we have set forth for industry. It will be an industry competitive-design approach.

Admiral **Walters**. We are in production on the MCM, having the lead ship awarded 2 years ago, a follow ship to be awarded to a second source contractor in last year's program, and this year we are requesting to continue building the MCM at four.

The MSH is the lead ship of the class. There would be one this year and then we would want to continue in the 5-year plan to build toward the objective of 17.

FLEET OILER TAO 187

Mission:

To provide rapid replenishment of petroleum products to operating forces at sea.

CHARACTERISTICS

LENGTH: 677.5 FT
NAV DRAFT: 35.0 FT
SPEED: 20 KT Sustained
SHAFT HORSEPOWER: 32,000
BEAM: 97.5 FT
CAPACITY: 180,000 Barrels
PROPULSION: Medium Speed Diesel

FUNDING REQUEST	NUMBER	COST	BUILDER
FY 1984 PROGRAM	3 SHIPS	$524.6 MILLION	AVONDALE

The final ship that I want to discuss specifically is the TAO. I think that this committee has been supportive of this program, but it is so important to the Navy that I want to mention it specifically because here is another area where we are well behind the power curve in providing modern replenishment forces for our Navy.

The TAO is an example of an innovative use that we are making in our shipbuilding approach in that it involves a great deal of commercial specifications for the ship and yet the military aspects of the ship are covered by military specifications.

So that generally this ship is built to commercial standards and all the military equipment is built to military standards.

Senator **COHEN**. Why couldn't you use chartered tankers?

Admiral **WALTERS**. Very expensive, Senator, because first, there are very few tankers that are of the size that you could use for oilers.

Second, to put the capability in them is very expensive from the standpoint of the underway replenishment equipment because the oilers must be able to be used in a backup as station ships in case one of the station ships is lost in combat.

So that they have to be able to not just be a shuttle oiler, but they have to be able to replenish a battle group including the carrier.

Mr. **SAWYER**. The question is speed, 20 knots versus 15 knots. It is a heavy penalty in the commercial ship to try to make it go 20 knots.

Admiral **WALTERS**. So, we have a long-range objective to build 21 of these ships. We have had approval for the first two and we are now looking at building three to four a year in order to reach that objective.

There are three ships in the fiscal year 1984 request.

[The prepared statement of Admiral Walters follows:]

PREPARED STATEMENT OF VICE ADM. ROBERT L. WALTERS, U.S. NAVY, DEPUTY CHIEF OF NAVAL OPERATIONS FOR SURFACE WARFARE

Mr. Chairman and distinguished members of the Committee, I am Vice Admiral Robert L. Walters, USN, the Deputy Chief of Naval Operations for Surface Warfare and the Appropriations Sponsor for Shipbuilding and Conversion, Navy (SCN).

Today, I am privileged to have the opportunity to present to you the Navy's Shipbuilding and Conversion budget request for fiscal year 1984 and to explain our requirements for this year as well as the remainder of the fiscal year 1984-88 five year shipbuilding plan.

During your deliberations last year, Congress gave full and unstinting support to the Administration's proposal to rebuild the U.S. Navy. With no critical adjustments to the President's request, you provided over sixteen billion dollars for Shipbuilding and Conversion, including the construction of two *Nimitz* class nuclear powered aircraft carriers. This clear statement of national will was heard around the world. This was a clear signal that we as a nation intend to maintain a modern and powerful fleet as a part of our national strategy. We are fully aware of the difficult decisions you face in allocating our limited national resources and it is my intent to justify our shipbuilding and conversion requirements and provide the information you require in order to make the difficult decisions which lie ahead.

The Navy requires a balanced mix of ships and capability to provide adequate forces to permit a flexible response in conventional warfare and a secure nuclear deterrent force. We must retain sufficient naval forces to support the national strategy and to permit our national leadership a choice of responses over the full range of threats to our national security and treaty commitments. The Secretary of the Navy and the Chief of Naval Operations have provided in their testimony a clear statement of our overall requirements and the rationale which supports the fiscal year 1984 budget request. Therefore, I will concentrate on those specific elements of our current and projected force mix which lead to the fiscal year 1984 shipbuilding and conversion request and to the five year plan presented herein.

The Chief of Naval Operations has testified that "our highest priority is to deter nuclear war." The Navy is justifiably proud of its contribution to the Strategic Triad. We continue to devote considerable resources to maintaining and improving our undersea nuclear deterrent capability. Notwithstanding the high priority which must be assigned to strategic deterrence, we continue to believe strong conventional forces are an essential ingredient to the deterrence of conflict in general. Sea based airpower has long been a great and unique strength of the U.S. Navy, and we have made notable progress in both improving and increasing this capability by adding the necessary ships and aircraft to achieve a 15 Carrier Battle Group force by 1990. With the two CVN's appropriated last year, a continuation of the Carrier SLEP program, judicious service life extension of our older ships, and projected new construction, we can forecast a strong and highly capable Navy through the 1990's.

Our nuclear attack submarine force is another specific area of national strength. We continue to build and operate the best submarine force in the world even though we are significantly out-numbered by the Soviet Navy. Accordingly, we hope to increase our annual SSN construction rate to ensure we attain our minimum force level objective of 100 nuclear attack submarines. Our reliance on the strength and responsiveness of our Navy-Marine Corps amphibious force has again been demonstrated in our peacekeeping efforts in Lebanon. We have the best amphibious capability in the world today but, as our commitments continue at a high level, we must expand and modernize these forces.

Having addressed the major elements of our naval forces which support our missions of deterrence, power projection and sea control, it is necessary to address a number of essential ingredients which are less publicized but nevertheless vital to our overall balanced force structure. I now refer to a relatively large number of ships which comprise our surface combatant force, mobile logistic support force and mine countermeasures force. Naval planners are not so vain as to think we can be victorious in conflict without the full contribution of our sister services, nor do we think we can prevail with only our capitals ship assets or CVN's, SSN's, and amphibious ships. The offensive and defensive capability and the numerical strength of complementary surface combatants are applied to every naval warfare area. The distributed offensive power residual in surface ships equipped with cruise missiles, long range surveillance afforded by surface ship AAW and ASW sensors, in depth firepower inherent in modern surface-to-air missiles and ASW weapons, naval guns to provide all weather around the clock support to forces ashore, and the diverse means of deploying these factors on any naval mission in any area of the world serve to round out the total strength of the U.S. Navy. Another distinct advantage that the U.S. Navy maintains over our potential adversaries is our ability to conduct sustained combat operations in distant places, far removed from base support structures. Our mobile logistic support forces which are composed of ships carrying fuel, ammunition, stores and repair facilities are also an essential ingredient of our total force concept. We have an urgent need to replace many overage ships and to modestly increase our force levels to keep pace with our naval strategy while providing some margin for attrition in conflict.

Finally, we must proceed to correct a long neglected aspect of naval warfare—mine countermeasures. Mine stockpiles coupled with known ability to deliver them represent a serious potential threat to the United States. Our extensive coastline and numerous major port complexes must be afforded a degree of protection from enemy offensive mining. We have revitalized our mine countermeasures thinking and capability, and execution of the five year SCN plan is necessary to regain a minimal U.S. capability. Our program, in conjunction with the increased activity of several of our allies should regain an appropriate capability which will permit us to counter enemy mining efforts in vital areas.

I will now discuss in somewhat greater detail our justification for the shipbuilding program presented with the fiscal year 1984 budget request.

STRATEGIC SUBMARINE FORCES

The SSBN today is composed of thirty-one *Lafayette* and *Benjamin Franklin* class ships plus the first two Trident submarines, one of which began its deterrent patrols last year. Ten SSBNs of the oldest classes previously in inventory have been either deactivated or have been converted to attack submarine role. The Trident submarine is a much more capable ship in every aspect that its predecessor and is equipped with 24 missile tubes vice 16. The first eight of the class will carry the highly capable Trident I missile. Commencing with the ninth ship which was funded in fiscal year 1981, Trident submarines will be equipped with the even more potent

D-5 missile, also known as Trident II. Total SSBN force capability has been upgraded by the backfit of Trident I missiles on 12 of the Poseidon submarines.

The ultimate number of Trident submarines to be constructed is still under consideration and depends on a series of interrelated decisions related to our total national requirements, continued compliance with SALT and any new START agreements. Our current plans are to build one Trident submarine per year; however, it is feasible to build three Trident submarines every two years without impacting planned SSN construction or opening a new nuclear submarine production facility.

The SSBN remains the most secure member of our nuclear deterrent triad and the added capability which Trident brings to that mission makes the sea launched ballistic missile an increasingly attractive alternative.

ATTACK SUBMARINE FORCES

From 1973 until last year, the fiscally constrained minimum force level for SSNs was 90. During that period, the Joint Chiefs of Staff consistently identified a larger requirement and in consonance with the decision to increase force levels throughout the Navy, the SSN goal was raised to its current level of 100. While 100 SSNs still constitute an austere force, the increase does recognize a growing and increasingly formidable Soviet threat.

Regardless of force size, it is imperative that we retain qualitative superiority in this critical area of Naval warfare. As the Soviets continue to construct new and increasingly sophisticated submarines, it becomes more difficult to maintain this qualitative edge. The Soviets are building fast, quiet, deep diving submarines. It will be a challenge to our technological competence to stay ahead of them in the future. The five year plan contains sufficient SSN 688 class submarines to permit us to reach the goal of 100.

The addition of bow-mounted vertical launch tubes to the SSN 688 building program provides a new dimension to the tactical capabilities of the attack submarine force and contributes to our distribution of offensive power.

AIRCRAFT CARRIER FORCE LEVELS

Funding last year of two *Nimitz* class nuclear powered aircraft carriers and the expected extension of the service life of the USS *Midway* will permit Navy to achieve its goal of 15 deployable CV/CVN by the end of calendar year 1990. The five year shipbuilding plan submitted with this budget shows an additional CVN in fiscal year 1988. However, we do not anticipate that the five year plan to be submitted with the fiscal year 1985 budget will include a CVN. Based on their current material condition, we hope to be able to retain *Midway* and *Coral Sea* in service well into the 1990's, thus deferring the need for another new CVN start until 1990 or later.

SURFACE COMBATANT FORCES

Due to the multiple types of warfare capabilities required within a broad mix of surface combatants, sizing of each ship class to produce the minimum required force is a difficult process.

Battleships augment the offensive power of carrier battle groups. Teamed together with cruisers and destroyers they are the predominant striking force of Surface Action Groups (SAG). They constitute the major naval gunfire support element in amphibious operations. Cruisers and destroyers operate over the entire spectrum of naval warfare; with the carrier battle groups, surface action groups, amphibious task forces and underway replenishment groups. They are designed to function in high threat areas and possess the requisite weapon systems, command and control facilities, engineering redundancy and endurance to conduct sustained combat operations at sea. Frigates, on the other hand, are less capable ships designed for open ocean escort duty either in lower threat areas or under the broad umbrella of more capable land or sea based forces. They are smaller, less capable, and less costly warships, and are generally optimized in only one warfare area, ASW.

Surface combatant force requirements are derived from our overall naval strategy and are necessarily somewhat dependent upon carrier and amphibious force levels and the breadth of sea lane defense projected in our national strategy. Since each combatant is an integral and indispensable member of a battle force, we have placed emphasis on total force capability vice numbers of ships, in developing a realistically attainable and capable minimum force level objective. Over the past few years, the requirements for surface combatants have remained stable. Support of all projected tasking requires four battleships, thirty-three guided missile cruisers, sixty-seven guided missile destroyers, thirty-seven destroyers and one hundred and one frigates. This is considered our minimum force level objective. Actual force levels to be achieved have become an affordability issue.

We have in hand thirty-one DD 963s which constitute our modern destroyer force. Our frigate inventory, both active and Naval Reserve, will be 95 at the end of fiscal year 1983 and will grow to 114 before beginning to decline in the mid to late 1990s when the FF 1040 and FFG 1 classes reach the end of their expected service life. Thus both our destroyer and frigate requirements are basically satisfied with present ships having an average age of less than ten years. Several frigates are still to be delivered.

Two of the four battleship reactivations which we require have been approved by the Congress. These ships are the most survivable units afloat and provide a powerful addition to any naval force. Moreover, the awesome firepower of sixteen inch guns provides naval gunfire support for amphibious forces. We need to add the remaining two battleships to our active forces.

With the ten CG 47 class ships already authorized, those contained in our five year plan and existing CG/CGN class ships will sustain our cruiser requirements as older ships reach thirty years of life. The CG 47, however, adds AAW capability much needed in our fleet—firepower, quick reaction and the ability to operate effectively in an adverse electronic countermeasures environment. Therefore, we need to sustain the current building rate of three ships a year.

The most critical area in surface combatants is in guided missile destroyers. We are approaching block obsolesence of both the DDG 2 and DDG 37 class ships, thirty-three in all, which were constructed during the 1950's and early 1960's. All of these ships are essentially twenty years old and can not be predicted to have useful service lives beyond thirty years. These ships are now the numerical backbone of our battle group capable ships and we must start their timely replacement. We have spent four agonizing years in completing the conceptual and preliminary design of a new DDG. We have now defined the characteristics of DDG 51, the *Arleigh Burke* class, and are commencing contract design which will support the lead ship in the fiscal year 1985 SCN program. DDG 51 is highly capable and very survivable guided missile destroyer, designed to perform well in any mission area and with any battle force. This ship is the only surface combatant to be initiated in the 1980's.

Before concluding my remarks concerning surface combatants, it is appropriate to apprise you of our modernization efforts because they go hand in hand with new construction to keep our total force readiness apace of the threat. There are three principal thrusts to the modernization effort, improved ASW, improved AAW and addition of a powerful standoff capability against ships and shore targets. Although not a part of the SCN appropriation, I think you have direct interest in these improvements. The major modernization of our ASW capabilities consists of adding tactical acoustic towed arrays, SQR–18 series to FF 1052 and NRF FFG's and SQR–19 to DD 963 and active force FFG's.

In addition all these ships will have either Lamps I or Lamps III capability and are already equipped with hull mounted active sonars. In AAW our prime objectives are to add New Threat Upgrade (NTU) to existing Cruisers of the CG 16 and 26 classes and all of the nine CGN's and to install Close In Weapon Systems (CIWS) for anti-ship missile defense in virtually all combatants. Some of the ships which receive the New Threat Upgrade may be selectively extended beyond thirty years of service life in order to maintain overall combatant force levels. The New Threat Upgrade will permit these ships to combat the majority of the threat of the 1990's. Although not as capable as Aegis equipped cruisers or destroyers, ships with NTU will add diversity to our AAW capability and permit retention of SM–2 (ER) surface-to-air missile capability. The CIWS installations will provide an effective self defense system specifically designed to counter the sea-skimmer family of missiles. These systems will be installed in about 70 ships by the end of fiscal year 1983 and we are continuing procurement and installation at the maximum practicable rate.

The newest and most exciting capability being added through modernization is the long range Tomahawk cruise missile. Through a combination of Armored Box Launchers (ABL) and Vertical Launch Systems (VLS) in selected nuclear cruisers and 963 class destroyers we will add significant standoff strike capability. These launchers can accommodate a mix of anti-ship and land attack missiles with either conventional or nuclear warheads. This, in conjunction with VLS being installed in CG 47 class ships and designed into the DDG 51 class will add significant distribution of our offensive firepower. By the late 1980's true offensive power will reside not only in carriers but also in submarines and surface combatants. The broad application of cruise missiles to naval forces is the greatest step forward in the past two decades. Finally, our modernization efforts concentrate on correcting long standing safety and reliability problems in ship systems and in significant upgrades to survivability through fragment protection and improved fire fighting and damage control alterations.

AMPHIBIOUS FORCES

For many years after the Second World War, the Navy/Marine Corps team relied on wartime inventory for its amphibious lift. Faced with block obsolesence in the 1960s, a large building program was begun which resulted in the acquisition of most of our current inventory.

For many years, the requirement for amphibious forces was relatively static at a level required to lift the Assault Echelon (AE) of a Marine Amphibious Force (MAF). This MAF (AE) lift was, in the early 1980s, deemed inadequate to meet the growing worldwide requirement and in early 1982, our goal was raised to the lift of the MAF (AE) plus a Marine Amphibious Brigade (MAB). This requirement has been further refined to include only the Assault Echelon of the MAB as an interim goal with the lift of the full force by 1994.

The mix of requirements for various amphibious ships is determined by Marine Corps lift "fingerprints." These fingerprints establish totals of troops, square footage for vehicles, cubic footage for cargo and the number of spots for helicopters based on CH-46 equivalents. One ship needed to meet these requirements is the LSD 41 class, initially authorized in fiscal year 1981. Three of these ships have been appropriated to date. This year we are requesting the initiation of a three year-five ship Multi-Year Procurement program for LSD 41's. In addition, this year marks the introduction of the lead ship of the LHD 1 class. The LHD 1 is a refinement of the LHA design and features a convertible mission capability. Ostensibly designed as a helo capable amphibious ship, the LHD can be converted easily and quickly to a sea control ship utilizing VSTOL AV-8B Marine aircraft.

Affordability considerations make it imperative to consider alterations in lieu of new construction. Therefore, this year we are requesting funds for a Service Life Extension program for the LPD-4 class. These ships are generally in good shape and given proper additional overhaul and restoration work, including upgrades to improve helo and LCAC lift, will continue to be vital assets through the 1990's.

LOGISTIC SUPPORT FORCES

The logistic support force has been sized to provide one large multiproduct ship (AOE/AOR) on station with each carrier battle group. Currently there are eleven of these ships (four AOEs and seven AORs) in inventory. Commencing in fiscal year 1986 we are requesting one AOE a year through fiscal year 1988. The station ships accompany the Carrier Battle Group and themselves will be replenished by oilers (AO/TAO), ammunition ships (AE) and combat stores ships (AFS/TAFS) operating in Underway Replenishment Groups (URGS) from either CONUS or advanced bases. Another pressing need is to rebuild the oiler fleet which is primarily composed of ships over thirty years of age. Two ships of the TAO 187 class have been appropriated. We have a total oiler requirement equivalent to twenty-five of these ships.

Currently, we are three AEs short of our requirement. The three ships in the current five year plan will meet that goal and we are actively working the design of these ships. A production decision to continue to build AEs as replacements for those appropriated in the 1950's will be required in the next few years.

The two TAFS ships purchased from Great Britain in fiscal year 1982 have proven to be excellent additions to our combat stores ship inventory. The final ship of that class is requested in this year's budget. The acquisition cost of this third TAFS includes propulsion plant spare parts held in the UK inventory and represents a bargain procurement to meet a pressing need for stores ships.

MINE WARFARE FORCES

For the past quarter century, the U.S. Navy has had to rely solely on a small group of ocean minesweepers (MSO), built in the mid to late 1950s. In the recent past, this force has been augmented by a mine sweeping helicopter capability. By the end of fiscal year 1983 there will be only twenty-one MSOs, three in the active forces and eighteen in the Naval Reserve Force, augmented by twenty-two MCM helicopters. These ships are rapidly approaching the end of effective service life and require replacement as soon as possible. Congress appropriated funds in fiscal year 1982 for the lead ship of a new class of Mine Countermeasures ship, the MCM 1, and a second ship of the class was appropriated in fiscal year 1983. An acceptable risk force requires a total of fourteen of the MCM 1 class. These ships will be augmented by a class of Coastal Mine Hunter Sweepers, the MSH. The lead MSH is included in the fiscal year 1984 budget. Seventeen MSHs are planned for construction. This total of 31 mine countermeasures ships represents a bare minimum requirement which will dictate sequential clearance of U.S. waters and a heavy reliance on our allies to keep their own waters swept. We believe that we are on the right course with the proper minimum mix of ships and helicopters to meet our mine countermeasure requirements within acceptable risk.

The balance of our requirements are needed to provide sufficient sealift to support our defense strategy and to support specific naval requirements in missile resupply, oceanographic research and care for combat casualties. I will now specifically address the fiscal year 1984 SCN request.

NAVY FIVE YEAR SCN PLAN
FISCAL YEAR 1984-1988
CONGRESSIONAL SUBMISSION

	FY 84	FY 85	FY 86	FY 87	FY 88
TRIDENT	1/1832.1	1/1988.2	1/1926.5	1/2054.2	1/2186.5
SSN-688	3/2042.4	4/2999.2	4/3155.8	5/3849.9	5/4111.3
CVN	—	—	852.4	1092.7	1/3793.9
CV SLEP	95.9	1/794.0	108.2	1/810.1	267.8
CG-47	3/3435.0	3/3519.3	3/3679.9	3/3817.4	2/2822.0
DDG-51	99.5	1/1363.7	161.0	3/3174.0	5/5164.0
DD-963	—	—	—	247.8	1/1096.7
BB (R)	57.7	1/559.8	1/418.4	—	—
LSD-41	1/509.0	2/676.2	2/625.5	2/836.0	2/885.5
LHD-1	1/1379.7	113.5	1/1212.8	125.1	1/1347.3
AMPHIB SLEP	13.8	46.2	1/292.4	3/857.8	3/873.2
LPDX	—	—	—	119.1	1/927.7
MCM	4/381.0	4/350.4	4/365.5	—	—
MSH	1/65.0	—	4/280.0	4/295.0	4/306.0
AD	—	—	—	1/509.0	1/508.8
AE	—	—	1/497.3	1/383.1	1/395.0
AFS	—	—	—	1/449.9	—
AOE	—	—	1/807.9	1/631.9	1/657.0
TAGS (C)	34.5	2/224.1	—	—	—
TAH (C)	1/260.0	—	—	—	—
TAK (C)	.9	1/96.5	—	—	—
TAFS (A)	1/16.1	—	—	—	—
TAGM (C)	—	46.0	1/134.0	—	—
TAGOS	—	2/135.8	2/128.9	2/132.5	—
TAO	3/524.6	4/920.0	4/908.9	4/936.0	4/1045.0
TAKR	4/246.5	—	—	—	—
TARC	—	—	1/397.2	—	—
LCAC	(6) 161.1	(12)266.0	(12)275.0	(12)288.3	(12)306.7
SERV CRAFT	119.3	148.7	199.7	158.0	146.2
LAND CRAFT	15.0	—	—	—	—
COST GROWTH	674.7	—	—	—	—
ESCALATION	375.6	—	—	—	—
STRAT SEALIFT	31.0	34.0	41.0	37.0	31.0
OUT	204.2	238.6	208.8	238.2	317.5
PD	124.2	178.8	119.5	205.2	135.7
TOTAL	**12,698.8**	**14,699.0**	**16,796.6**	**21,248.2**	**27,324.8**
SHIP COUNT	**17/6**	**21/5**	**28/3**	**28/4**	**30/3**

VG-1

FISCAL YEAR 1984 SHIPBUILDING REQUEST

The Navy's shipbuilding history over the past three decades has been one of feast or famine. This has resulted in approaching block obsolescence of guided missile battle group escorts, amphibious shipping, mobile logistic support ships and the piteous condition of the Mine Warfare ships. We are not requesting an inordinate buildup in the years to come, but rather an orderly period of sustained procurement intended to minimize increasing obsolescence of many of our ships. Over the next five years we are requesting funding for one hundred and forty-five ships which include one hundred and twenty-four new contruction and twenty-one conversions, modernizations or acquisitions.

FY 1984 BUDGET
SHIPBUILDING AND CONVERSION NAVY (SCN)
($ IN MILLIONS)

PROGRAM	NUMBER	BUDGET REQUEST
TRIDENT	1	$1,525.6
TRIDENT A.P.	–	306.5
ATTACK SUBMARINE	3	1,706.4
ATTACK SUBMARINE A.P.	–	336.0
CARRIER SLEP (CV-SLEP) A. P.	–	95.9
GUIDED MISSILE CRUISER (CG-47)	3	3,431.4
GUIDED MISSILE CRUISER A.P. (MK45 GUN MT)	–	3.6
GUIDED MISSILE DESTROYER A.P.	–	99.5
BATTLESHIP A.P.	–	57.7
LANDING SHIP DOCK (LSD-41)	1	326.9
LANDING SHIP DOCK A. P.	–	182.1
AMPHIBIOUS ASSAULT SHIP (LHD-1)	1	1,379.7
AMPHIBIOUS SLEP (LPD-4 SLEP) A.P.	–	13.8
MINE COUNTER MEASURES SHIP (MCM)	4	381.0
MINE SWEEPER HUNTER (MSH)	1	65.0
OCEAN SURVEY SHIP (TAGS) A.P.	–	34.5
HOSPITAL SHIP (TAH)	1*	260.0
MISSILE RESUPPLY SHIP (TAK-FBM) A.P.	–	.9
COMBAT STORES SHIP (TAFS)	1**	16.1
FLEET OILER (TAO)	3	524.6
FAST LOGISTICS SHIP (TAKR)	4*	246.5
LANDING CRAFT	–	146.6
LCAC A. P.	–	29.5
SERVICE CRAFT	–	119.3
STRATEGIC SEALIFT	–	31.0
COST GROWTH	–	674.7
ESCALATION	–	375.6
OUTFITTING	–	204.2
POST DELIVERY	–	124.2
TOTALS 17 NEW CONST. 5 CONVERSIONS* 1 ACQUISITION **	23	$12,698.8

This plan is fully supportive of the balanced 600 ship Navy leading to the target goals of 15 Carrier Battle Groups, four Battleship Surface Action Groups, 100 Nuclear Attack Submarines, Amphibious Lift for an MAF(AE) plus MAB(AE) and the Mine Warfare and Mobile Logistic Support Forces required to support them. This year we are requesting funds for twenty-three ships including seventeen new construction ships and six conversions or acquisitions.

TRIDENT SUBMARINE - SSBN

Mission:

To provide an undersea strategic missile system to ensure that the United States continues to maintain a credible, survivable deterrent, independent of forseeable threats.

CHARACTERISTICS

LENGTH:	560 FT	BEAM:	42 FT
NAV DRAFT:	36 FT	DISPLACEMENT (SUBMERGED):	18, 700 Tons
PROPULSION.	Nuclear	SPEED:	20+ KTS
WEAPONS:	24 SLBM Missiles, Torpedoes		

FUNDING REQUEST	NUMBER	COST	BUILDER
FY 1984 PROGRAM:	1 SHIP	$1,832.1 MILLION	ELECTRIC BOAT

TRIDENT SSBN

This past year has been a highly successful one for the Trident program. The first of the class, U.S.S. *Ohio,* completed all of its trials in an outstanding manner and is now conducting routine deterrent patrols. The second Trident, U.S.S. *Michigan,* delivered in August of 1982, and is in the midst of its workup period leading to initial deployment this summer.

Commencing in June of this year, with delivery of *Florida* (SSBN 728), the Electric Boat Company will deliver Trident submarines to the Navy on an average of one every eight months over the next three years. This massive addition of firepower greatly increases the throwweight and survivability of the U.S. nuclear deterrent force.

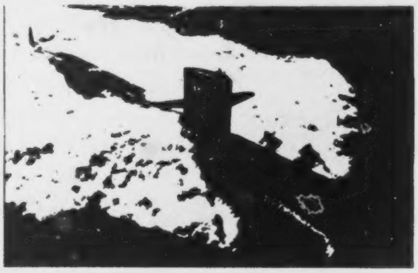
Last year, the Congress appropriated funds to fully fund one D-5 configured Trident submarine. This was in response to a Navy initiative to accelerate the D-5 program by introducing the D-5 missile in the fiscal year 1981 ship. Increased funding is required for the fiscal year 1981 lead D-5 ship in addition to that initially appropriated for its construction as a Trident I ship. This budget request contains $436.0 million in the cost growth line to complete the 1981 Trident as a D-5 capable submarine.

For construction of the eleventh Trident in fiscal year 1984 plus advance procurement for future ships, this year's budget requests $1,832.1 million for the Trident program.

NUCLEAR ATTACK SUBMARINE - SSN 688

Mission:

To destroy enemy ships, primarily submarines, in order to prohibit the employment of such forces in attack and destruction of U.S. and Allied targets.



CHARACTERISTICS

LENGTH:	360 FT	BEAM:	33 FT
NAV DRAFT:	32 FT	DISPLACEMENT:	6,900 Tons
PROPULSION:	Nuclear	SPEED:	20+ KTS
WEAPONS:	Torpedoes, HARPOON, TOMAHAWK		

FUNDING REQUEST	NUMBER	COST	BUILDERS
FY 1984 PROGRAM:	3 SHIPS	$2,042.4 MILLION	NEWPORT NEWS ELECTRIC BOAT

NUCLEAR ATTACK SUBMARINE—SSN-688 CLASS

This year's budget requests authorization and appropriation for three SSN-688 class nuclear attack submarines which represent the forty-second through forty-fourth ships of this class. Of the forty-one previously funded by the Congress, twenty-one have delivered and the remaining twenty are under contract with three of those scheduled for delivery during the remainder of fiscal year 1983.

Despite the success of this class, fiscal constraints have precluded an Administration request for more than two SSN-688 a year since fiscal year 1977. This year's request for three SSN-688 class ships reflects a renewed determination to achieve and maintain the goal of one hundred nuclear attack submarines. This will require the construction of at least ten of these ships every three years and the Navy requests your support in achieving that end.

This year we are requesting $2,042.4 million for construction of three SSN-688. This includes $336.0 million in long lead items for follow ships.

CARRIER SERVICE LIFE EXTENSION PROGRAM-CV SLEP

Mission:

To operate aircraft and engage in attacks on targets afloat and ashore.

CHARACTERISTICS (USS INDEPENDENCE)

LENGTH:	1,070 FT	BEAM:	129.5 FT
NAV DRAFT:	37 FT	DISPLACEMENT:	79,300 Tons
CATAPULTS:	4	SPEED:	34 KTS
AIRCRAFT:	1 Carrier Air Wing, 83 Aircraft		

FUNDING REQUEST	COST	INDUSTRIAL SITE
FY 1984 PROGRAM:	$95.9 MILLION (Advance Procurement)	PHILADELPHIA NAVAL SHIPYARD

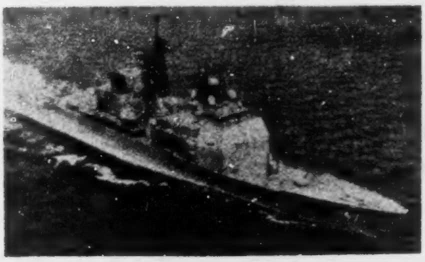
AIRCRAFT CARRIER SERVICE LIFE EXTENSION PROGRAM—CV SLEP

The CV SLEP Program was formulated in the late 1970's as the only economically feasible way to maintain adequate numbers of large deck carriers through the remainder of the twentieth century. The first ship to be inducted into CV SLEP Program was U.S.S. *Saratoga* which entered the Philadelphia Naval Shipyard in October 1980 and completed on schedule last month. The second ship to enter the SLEP program is U.S.S. *Forrestal* (CV 59) which began its 28 month program in January of this year, also at the Philadelphia Naval Shipyard. Given the experience gained in the execution of the *Saratoga* project, I am confident that *Forrestal* will also experience a highly successful service life extension. We are already well along in the planning stage for the third ship, U.S.S. *Independence*, which will enter Philadelphia Naval Shipyard in April of 1985. The long lead funding of $95.9 million requested in this year's budget is for the *Independence* SLEP.

GUIDED MISSILE CRUISER - CG-47

Mission:

To destroy enemy aircraft, missiles, submarines and surface ships in order to prohibit the employment of such forces against U.S. forces. CG-47 class ships will normally be assigned to carrier battle groups or surface action groups.



CHARACTERISTICS

LENGTH:	563 FT	BEAM:	55 FT
NAV DRAFT:	31 FT	DISPLACEMENT:	9,600 Tons
PROPULSION:	Gas Turbine	SPEED:	30+KTS

WEAPONS: AEGIS Combat System, Vertical Launch System SM-2 MR, 2 5"/54 Guns, TOMAHAWK, HARPOON, TORPEDOES, Close in Weapons System (CIWS), LAMPS MK III Helicopter, CHAFFROC.

FUNDING REQUEST	NUMBER	COST	BUILDER
FY 1984 PROGRAM:	3 SHIPS	$3435.0 MILLION	INGALLS BATH IRON WORKS

GUIDED MISSILE CRUISER—CG 47 CLASS

The CG 47 class ship is our highest priority surface combatant. The fiscal year 1984 budget includes a request for three, the eleventh, twelfth and thirteenth ships of the class. The first ship of the class, U.S.S. *Ticonderoga,* was authorized and funded in the fiscal year 1978 budget and was commissioned 22 January 1983 at Pascagoula, Mississippi. Thus, the first of the class has joined the fleet and will deploy in October 1983, an unprecedented nine months after commissioning. *Yorktown,* CG 48, has been launched and will be christened 16 April 1983 and commissioned in July 1984.

The Aegis combat system installed in the CG 47 class is the most advanced anti-air warfare system in the world and is designed to counter the full spectrum of anti-ship missile threats of the 1990's and beyond. It provides area air defense in a high-density, high-threat, anti-ship missile environment. Our continuing assessment of Soviet missile-launching capabilities confirms that CG 47 class ships are urgently required in the fleet in numbers.

The CG 47 class cruiser is the third combatant class to use the proven hull of the *Spruance* destroyer. By adopting this hull to the more heavily armed *Kidd* class guided missile destroyer, some of the original *Spruance* growth margin was used. U.S.S. *Ticonderoga* with even more armament continues this practice using an additional portion of the original *Spruance* margins. U.S.S. *Ticonderoga* displaces 9,600 tons but retains 600 tons of service life margin. Well within her limiting displacement of 10,200 tons, she has already proven herself safe, stable and highly capable at sea. U.S.S. *Ticonderoga* is a quality product and her addition to the fleet will add a new dimension to Battle Group AAW protection. In addition to a quantum improvement in anti-air warfare, the CG 47 class has superior capabilities in anti-submarine and anti-surface ship warfare as well as improved passive protection. CG 47 class ships will operate as an essential component of battle groups formed around our aircraft carriers, and will enhance the battle group's ability to fight and survive in the most hostile environment. CG 47s will also be utilized with *Iowa* class Battleships and other surface combatants to form potent Surface Action Groups.

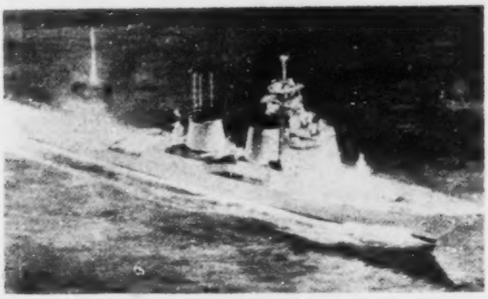
These ships are now being constructed at two shipyards, Ingalls Shipbuilding at Pascagoula, Mississippi and Bath Iron Works in Bath, Maine.

The funding requirement for the CG 47 class in fiscal year 1984 is $3,435.0 million for three ships.

GUIDED MISSILE DESTROYER - DDG 51

Mission:

To destroy enemy aircraft, missiles, submarines and surface ships. The DDG 51 will be employed as a part of a Carrier Battle Group, Surface Action Group, Underway Replenishment Group or Amphibious Group.



CHARACTERISTICS (Tentative pending contract design)

LENGTH:	466 FT	BEAM:	Less Than 60 FT
NAV DRAFT:	20 FT	DISPLACEMENT:	8,200 Tons
PROPULSION:	Gas Turbine	SPEED:	Over 30 KTS

WEAPONS: AEGIS Combat System, Vertical Launch System, TOMAHAWK, SM-2 MR, CHAFFROC, VLA, SEAFIRE /Guided Projectile.HARPOON, Torpedoes, 1 5"/54 gun

FUNDING REQUEST	COST	BUILDER
FY 1984 PROGRAM:	$99.5 MILLION (Advance Procurement)	TBD

ARLEIGH BURKE CLASS GUIDED MISSILE DESTROYER—DDG 51

Arleigh Burke (DDG 51) is a capable multi-mission ship with proven engineering and combat systems. This class will supplement the *Spruance* class Destroyers and *Ticonderoga* and *Virginia* class Cruisers in the Battle Groups of the 1990's. Anti-Air Warfare, Anti-Submarine Warfare, Anti-Surface Warfare and strike capabilities are compatible with, and designed to supplement, CG 47 and other combatants which will be present in the fleet of the 1990's.

DDG 51 introduces a new hull form designed with better predicted survivability than her predecessors. Kevlar armor plating protects vital spaces and a partial Collective Protection System provides for the first time in a U.S. Navy combatant for CBR defense. Steel is used throughout the hull and in all vital areas of the superstructure. Steel construction, with increased resistance to blast over pressure, fragment and fire damage plus Electromagnetic Pulse protection designed into major electronics equipment, enhances survivability in any battle scenario.

The lead ship engineering plant employs the same propulsion train used in CG 47 and takes advantage of the cost benefits associated with that proven, reliable system. A three generator electric plant is arranged to support survivability. New development systems, such as the Rankine Cycle Energy Recovery (RACER) System, are ongoing and could be incorporated in later flights of the class, or in future classes, if and when technical feasibility, reliability and cost effectiveness have been demonstrated.

DDG 51 incorporates the best applied technology available in anti-air warfare. Based on a phased array radar, *Arleigh Burke* provides unique advantages in AAW over older guided missile ships in terms of performance, reaction time, firepower, availability and area coverage. The SPY-ID radar can detect targets at long ranges in clear environments and offers quantum improvements in hostile environments which include jamming, high clutter caused by rain, high sea state and chaff. The AAW weapon system will provide a fast response time from initial target detection to a missile leaving its vertical launch rails. Armed with SM-2 Missiles, two Phalanx Close-In Weapon Systems and a MK-45 5"/54 gun having laser guided projectile capability, AAW capability is optimized by high firepower and fast reaction and specifically designed to counter the threat expected in the 1990's and beyond.

A major strike warfare (STW) capability is designed into *Arleigh Burke* which is a significant part of her character and versatility. The *Arleigh Burke* class will be armed with Tomahawk Cruise Missiles that can be programmed onboard. These missiles can be fired with great accuracy at long-range against targets ashore as well as enemy ships. An important adjunct to the strike capability inherent in CV's, DDG 51 provides Task Group Commanders with flexibility and versatility in offensive operations not heretofore available. The multi-mission character of DDG 51 will allow her to conduct strike operations as a part of a Surface Action Group, a Battle Group, an Underway Replenishment Group or an Amphibious Force. In addition to Tomahawk, she carries Harpoon for anti-surface warfare (ASUW) operations. This capability, in combination with the accuracy inherent in the laser controlled Seafire Gun Fire Control System with guided projectiles, is a major contributor to her character as the most capable destroyer ever designed in the U.S.

DDG 51 will have a state-of-the-art long-range hull sonar system. Two batteries of Torpedo Tubes and vertically launched, extended range Anti-Submarine Rockets will provide for fast reaction attack. The AN/SQR-19 towed array sonar is designed into the ship to provide long-range passive detection, classification and localization capabilities for both ASW and ASUW over-the-horizon targeting engagements. The ship's combat systems include modern, complete air control facilities for coordinated operations with the entire spectrum of ASW aircraft (as well as CAP and strike aircraft). The flight deck is sized for Lamps MK III operations and MK III electronics are design budgeted into the ship. The request this year for advance procurement for the DDG 51 is $99.5 million in support of the lead ship to be requested for full funding next year.

BATTLESHIP REACTIVATION - BB(R)

Mission:

To conduct prompt and sustained combat operations at sea, worldwide, in support of national interests.

CHARACTERISTICS

LENGTH:	887 FT	BEAM:	108 FT
NAV DRAFT:	38 FT	DISPLACEMENT:	58,000 TONS
PROPULSION:	212,000 SHP	SPEED:	30 + KTS

WEAPONS: 9 16 Inch guns, 12 5 inch guns, 32 TOMAHAWK, 16 HARPOON, 4 Close in Weapons Systems (CIWS)

FUNDING REQUEST	COST	BUILDER
FY 1984 PROGRAM:	$57.7 MILLION (Advanced Procurement)	TBD

BATTLESHIP—BB 61 CLASS (REACTIVATION)

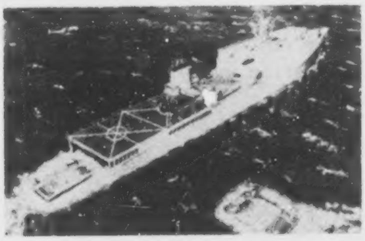
U.S.S. *New Jersey* was commissioned in December, within budget and ahead of schedule. The excitement and enthusiasm evident at *New Jersey's* commissioning from the President to each seaman on board surely reinforced the wisdom of the decision to bring these great ships back to active service. Last year the Congress approved full funding for the reactivation of *Iowa.* That ship has completed dry dock work at the Avondale Shipbuilding Company and is currently at Ingalls Shipbuilding in Pascagoula, Mississippi for the remainder of the modernization and reactivation package. The contract for this work has been signed with every indication that *Iowa* will deliver within budget and six months ahead of schedule.

Despite the vocal chorus of those who think these ships are obsolete, I personally believe that we cannot find a more cost effective procurement program. These ships provide incredible firepower and survivablity unequalled in post war ships. We need all four of these ships returned to the Fleet. This year's request contains $57.7 million for long lead items for the third battleship, the *Missouri.*

LANDING SHIP DOCK - LSD-41

Mission:

To transport and launch loaded amphibious craft and vehicles with their crews and embarked personnel in amphibious assault operations.



CHARACTERISTICS

LENGTH:	609 FT	BEAM:	84 FT
NAV DRAFT:	19.5 FT	TROOP LIFT:	504*
PROPULSION:	33,000 SHP	LCAC:	4
SPEED:	20+KTS	FULL LOAD DISPLACEMENT:	15,745 Tons

* 338 Troops plus 102 surge capacity; 64 assault craft unit accommodations.

FUNDING REQUEST	NUMBER	COST	BUILDER
FY 1984 PROGRAM:	1 SHIP	$509.0 MILLION	LOCKEED FY 81-FY 83 FY84 COMPETITIVE MULTI-YEAR

LANDING SHIP DOCK—LSD 41 CLASS

To date the Congress has appropriated funds for three LSD 41 class ships. These ships have been contracted to Lockheed Shipbuilding Corporation at the rate of one per year.

This year's five year plan recognizes the requirement to continue building this class ship and proposes a five ship-three year Multi-Year Competitve Procurement, which we estimate will save $246 million compared to the traditional annual procurement strategy.

This ship has been designed in concert with the design of the Landing Craft Air Cushion and will carry four of those craft. This provides a significant improvement in our ability to rapidly transport heavy combat equipment over a much wider range of landing area. Navy this year is requesting $509.0 million for the LSD 41 program which includes $182.1 million in advance procurement for the Multi-Year program.

AMPHIBIOUS ASSAULT SHIP - LHD 1

Mission:

To embark, deploy and land elements of a major Marine landing force in an assault by helicopters, VSTOL aircraft, landing craft and amphibious vehicles. The LHD class will also operate AV-8s in the attack role.

CHARACTERISTICS

LENGTH:	840 FT	BEAM:	106 FT
NAV DRAFT:	26 FT 1 IN	FULL LOAD DISPLACEMENT:	39,384 Tons
PROPULSION:	70,000 SHP	SPEED:	20+KTS
TROOP CAPACITY:	1,873	LCAC:	3
HELICOPTER SPOTS:	42 CH-46 equivalents		

FUNDING REQUEST	NUMBER	COST	BUILDER
FY 1984 PROGRAM:	1 SHIP	$1,379.7 MILLION	INGALLS

AMPHIBIOUS ASSAULT SHIP—LHD 1

This year Navy is requesting full funding for the lead ship of a new class of large amphibious ship, the LHD 1 class. These ships, with their large capacity to lift troops and equipment constitute the linch pin of our plan to increase Marine Corps amphibious lift. As mentioned previously, the ship is designed to permit it to convert to sea control and power projection missions when its amphibious tasks are completed. In this role, Marine Corps AV-8 aircraft would be embarked along with modular support vans to permit the ship to operate in a variety of missions.

The design of this ship is based on the current LHA design but has been modified to accommodate three LCAC and handle VSTOL aircraft. For fiscal year 1984, Navy is requesting $1,379.7 million for the lead LHD 1.

AMPHIBIOUS SERVICE LIFE EXTENSION PROGRAM
LPD 4 SLEP

Mission:

To transport and land troops and their essential equipment and supplies by means of embarked landing craft or amphibious vehicles augmented by helicopter lift.

CHARACTERISTICS

LENGTH:	570 FT	BEAM:	106 FT
NAV DRAFT:	23 FT	DISPLACEMENT:	16,700 Tons
PROPULSION:	24,000 SHP	SPEED:	21 KTS
TROOPS:	930 HELICOPTERS: 4*	LCAC:	2*

*After SLEP

FUNDING REQUEST	COST	INDUSTRIAL SITE
FY 1984 PROGRAM:	$13.8 MILLION (Advance Procurement)	TBD

AMPHIBIOUS SERVICE LIFE EXTENSION PROGRAM—LPD SLEP

As noted in the previous section on Amphibious Warfare, lift requirements have grown over the past two years. While we are actively pursuing new construction of LHD 1 and LSD 41 class ships, we simply cannot afford the lift we require unless we fully utilize the amphibious assets already in inventory.

The LPD 4 class is approaching the mid point of a traditional thirty year service life and all ships of the class are in good material condition for their age. The proposed SLEP will add ten to fifteen years to their life and provide the Navy/Marine Corps team with ships of increased capability. Current planning for the SLEP will provide capacity for two LCAC and four helicopters vice one LCAC and two helicopters which can be accommodated in the present configuration.

Navy considers this a prudent and cost effective way to ensure adequate lift for the future. The first LPD 4 SLEP is currently scheduled for fiscal year 1986. This year's budget requests advance procurement funds of $13.8 million.

MINE COUNTERMEASURES SHIP - MCM 1

Mission:

To hunt, neutralize and sweep mines in CONUS waters, choke points and overseas areas.

CHARACTERISTICS

LENGTH:	217 FT	BEAM:	39 FT
NAV DRAFT:	10.4 FT	SPEED:	14 KTS
PROPULSION:	2,280 SHP	HULL:	Wood/GRP

EQUIPMENT: Mine Hunting Sonar SQQ-30, Mine Neutralization System (MNS), Precise Navigation System AN/SSN-2

FUNDING REQUEST	NUMBER	COST	BUILDER
FY 1984 PROGRAM:	4 SHIPS	$381.0 MILLION	PETERSON MARINETTE MARINE

MINE COUNTERMEASURES SHIP MCM 1 CLASS

No segment of Naval Warfare has been underfunded for so many years as has the Mine Warfare community. Despite the large stockpiles of sophisticated modern mines possessed by the Soviets, we have only recently begun to respond to the threat. The lead ship of the new MCM class was funded in fiscal year 1982 and the second ship was appropriated in fiscal year 1983 and directed to a second source ship builder.

It is imperative that we move now to series production. The five year plan requests four MCM 1 class ships in each of the next three years. These ships are urgently needed to replace the obsolete MSOs which were built in the 1950's. The MCM 1 class is designed to permit the breakout of U.S. Forces from Conus ports and then to accompany deploying forces overseas and conduct mine clearance operations in theater.

Two of the three major combat systems have been approved for service use or will be within the next quarter. Approval for Full Production of the third system, the AN/SSN-2 Precision Navigation System (PINS) has been delayed slightly by an urgent real world operational requirement for the test ship, but that evaluation is now back on track and the system will be ready well in advance of its required date.

This year the Navy requests $381.0 million for four MCM 1 ships.

MINESWEEPER HUNTER - MSH 1

Mission:

To hunt and neutralize alll types of mines in CONUS coastal waters and the approaches to CONUS ports.

CHARACTERISTICS

LENGTH:	150 FT (EST)	BEAM:	TBD
PROPULSION:	TBD	DISPLACEMENT:	470 Ton (EST)
SPEED:	TBD	HULL:	Wood or Grp or Combination

EQUIPMENT: * Mine Hunting Sonar, SQQ-30 (Variant), Mine Neutralization System (Variant)
Precision Navigation System AN/SSN-2
* Equipment down sized for coastal mission.

FUNDING REQUEST	NUMBER	COST	BUILDER
FY 1984 PROGRAM:	1 SHIP	$65.0 MILLION	TBD

MINESWEEPER HUNTER—MSH 1

To augment the MCM 1 in the breakout clearance of U.S. ports, we require a coastal minesweeper hunter. After breakout of naval forces these ships will provide clearance for commercial harbors and continuing clearance/check sweep capability for major Conus ports.

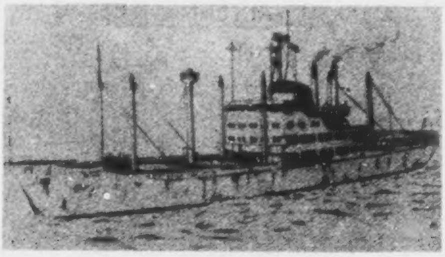
In order to build the minimum requirement of seventeen ships of this class, Navy has adopted a highly innovative acquisition strategy which totally involves the shipbuilding industry in the design process and takes advantage of industry wide competition and innovation in order to reduce costs.

The Request for Proposal for the MSH was released to industry on 7 December 1982 and the proposals are due to the Naval Sea Systems Command on 15 March. From these proposals, up to four builders will be selected for a competitive Phase I contract design. This will permit selection of two of the four builders as finalists in a Phase II competitive design effort culminating in award of the lead ship to the successful builder in August of 1984. In this process, Navy will take full advantage of the latest technical advances in small ship construction. The mission equipment to be installed in the MSH is planned to be either identical to or a subset of proven mission equipment developed for the MCM program. $65.0 million is requested for the lead ship in fiscal year 1984.

OCEAN SURVEY SHIP - TAGS

Mission:

Ocean Survey Ships are assigned to the Ocean Survey Program in direct support of the Submarine Launched Ballistic Missile (SLBM) Program.



CHARACTERISTICS (Conversion of C3 Hull)

LENGTH:	483 FT	BEAM:	68 FT
SPEED:	18 KTS	DISPLACEMENT:	16,400 Tons
PROPULSION:	12,500 SHP		

FUNDING REQUEST	COST	BUILDER
FY 1984 PROGRAM:	$34.5 MILLION (Advanced Procurement)	TBD

OCEAN SURVEY SHIP—TAGS (C)

The two ships requested in fiscal year 1985 are urgently required to replace overage and unreliable ships in the current inventory. These merchant ship conversions conduct underwater surveys in direct support of the Trident SSBN program. The advent of longer range missiles permits Trident submarines to operate in greater areas of the oceans with an increased requirement for survey coverage.

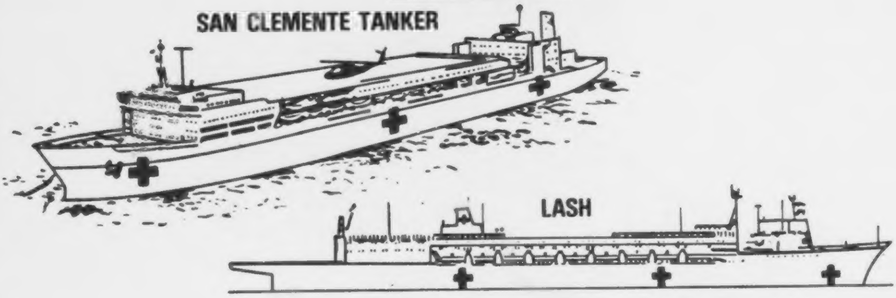
This year Navy is requesting $34.5 million for long lead material leading to conversion of two TAGS in fiscal year 1985.

HOSPITAL SHIP - TAH

Mission:

To provide full medical support on a worldwide basis to the Rapid Deployment Joint Task Force and other U.S. Forces that are engaged in combat operations or are located in areas where hostilities may be imminent.

ALTERNATIVES



CHARACTERISTICS

- 1000 beds, 12 operating rooms per ship plus required medical and ship keeping support.
- Ship characteristics depend on winner of completion.

FUNDING REQUEST	NUMBER	COST	CONVERSION YARD
FY 1984 PROGRAM:	1 SHIP	$260.0 MILLION	NATIONAL STEEL OR MARYLAND SHIPBUILDING

HOSPITAL SHIP—TAH

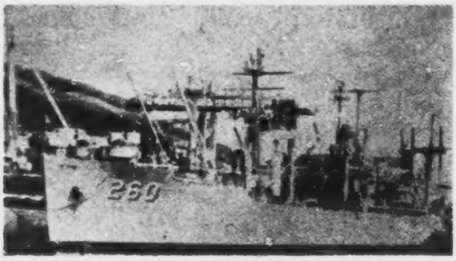
The lack of afloat medical care is widely recognized as a serious deficiency in our ability to support combat operations ashore, employing either amphibious or RDJTF forces. Afloat medical care in the form of hospital ships is a part of the overall continuing care needed to handle casualties which begins with the combat unit itself and extends through fleet hospital units ashore to Conus hospitals for eventual recovery of combat casualties.

Congress appropriated $300.0 million in fiscal year 1983 for the lead ship of this class. The House Appropriations Committee inserted language expressing its concern regarding the availability of acute care beds in the ships. Navy is addressing this problem with the two competing teams of builders and designers. I am assured that we can provide adequate numbers of acute and limited care beds under the $560.0 million cost estimate. This year Navy requests $260.0 million for the second TAH.

MISSILE RESUPPLY SHIP TAK (FBM)

Mission:

Provides Resupply service to Strategic Submarine tenders at Holy Loch Scotland, Charleston, S.C. and Kings Bay, Ga.



CHARACTERISTICS (Conversion of C3 Hull)

LENGTH:	483 FT	BEAM:	68 FT
SPEED:	18 KTS	DISPLACEMENT:	15,015 Tons
PROPULSION:	12,500 SHP		

FUNDING REQUEST	COST	BUILDER
FY 1984 PROGRAM:	$.9 MILLION (Advanced Procurement)	TBD

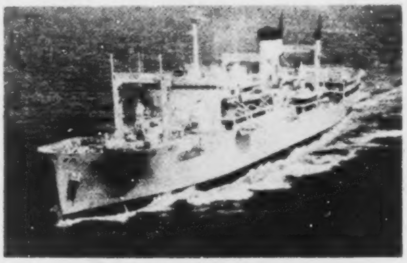
FLEET BALLISTIC MISSILE CARGO SHIP—TAK (FBM)

This proposed conversion of an existing cargo hull is required to provide logistic support by resupplying replacement missiles, major missile components, bulk stores, fuel and repair parts to SSBN refit sites at Holy Loch, Scotland, Kings Bay, Georgia and Charleston, South Carolina. This ship will replace an overage ship in current inventory. This year Navy requests $0.9 million in advance procurement funds for the TAK (FBM).

COMBAT STORES SHIP - TAFS

Mission:

To operate as a unit of an underway replenishment group and to furnish refrigerated, dry cargo and repair parts to the Fleet.



CHARACTERISTICS

LENGTH:	524 FT	BEAM:	72 FT
NAV DRAFT:	22 FT	DISPLACEMENT (FULL LOAD):	16,792 Tons
PROPULSION	11,250 BHP	SPEED:	18 KTS

FUNDING REQUEST	NUMBER	COST	BUILDER
FY 1984 PROGRAM:	1 SHIP	$16.1 MILLION (Includes $3.1 million for class spares)	NONE Purchase of existing ship from RFA

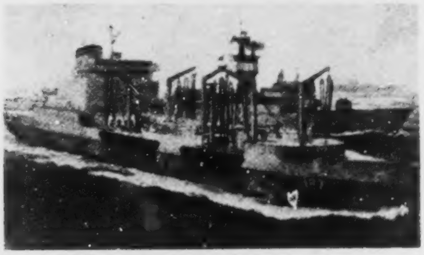
COMBAT STORES SHIP—TAFS

In fiscal year 1982 the Congress appropriated funds for the purchase of two Combat Stores ships from Great Britain. These ships, now designated USNS *Spica* and USNS *Sirius*, have been highly successful in supporting forward deployed U.S. Naval Forces throughout the world. As a result of a continuing drawdown in the Royal Fleet Auxiliary, the logistics arm of the Royal Navy, the RFA *Stromness* has been made available for sale to our Military Sealift Command. This is a sister ship to those purchased in fiscal year 1982. The request for $16.1 million includes $3.1 million for propulsion plant spares which will be required for maintenance of all three ships of the class. New construction costs for this ship in fiscal year 1984 would approach $400.0 million.

FLEET OILER TAO 187

Mission:

To provide rapid replenishment of petroleum products to operating forces at sea.



CHARACTERISTICS

LENGTH:	677.5 FT	BEAM:	97.5 FT
NAV DRAFT:	35.0 FT	CAPACITY:	180,000 Barrels
SPEED:	20 KT Sustained	PROPULSION:	Medium Speed Diesel
SHAFT HORSEPOWER:	32,000		

FUNDING REQUEST	NUMBER	COST	BUILDER
FY 1984 PROGRAM	3 SHIPS	$524.6 MILLION	AVONDALE

FLEET OILER—TAO 187 CLASS

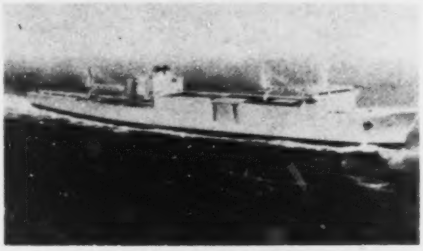
The TAO 187 program is a well defined program. Concerns over the design and the cost of the lead ship have been resolved. The contract for the lead ship, funded in fiscal year 1982, was awarded to Avondale at a cost which was less than expected. The first follow ship, funded in fiscal year 1983, has also been awarded to Avondale.

This year the request is for $524.6 million for the third, fourth, and fifth ships of the class. The requirement for new fleet oilers is pressing, given the age and capability of the existing oiler fleet.

FAST LOGISTIC SHIP - TAKR

Mission:

To enhance strategic sealift capability in support of the Rapid Deployment Force (RDF) specifically by moving equipment and supplies of heavy combat units rapidly to the greater Middle East, and providing the capability to move equipment and supplies for rapid reinforcement of NATO.



CHARACTERISTICS

LENGTH:	946 FT
DESIGN DRAFT:	30 FT
PROPULSION:	120,000 SHP
MAX SPEED:	33 KTS
DISPLACEMENT:	51,815 Light Tons
CONTAINERS:	1096 (Prior to conversion)

POST CONVERSION: 185,000 SQ FT RO/RO/capacity, Helicopter Flight Deck

FUNDING REQUEST	NUMBER	COST	BUILDERS	82	84
FY 1984 PROGRAM:	4 SHIPS	$246.5 MILLION	NATIONAL STEEL	2	1
			AVONDALE	1	2
			PENN SHIP	1	1

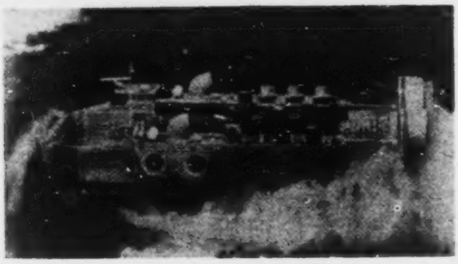
FAST LOGISTIC SHIP—TAKR

This year's budget request completes the process begun in fiscal year 1981 to acquire and convert eight SL-7 class high speed container ships. In fiscal year 1981 six of the ships were purchased. The remaining two were purchased in fiscal year 1982 and conversion of the first four was also funded in that year. Last year the Congress decided that the conversion should be staggered so that at least four of the ships would always be available to support contingency operations. This decision resulted in appropriation of $44.0 million in fiscal year 1983 for long lead material. The fiscal year 1984 budget requests $246.5 million for the conversion of the final four ships which are already covered under fixed-price options to the fiscal year 1982 conversion contracts. When converted the Roll on/Roll off (RO-RO) configuration, the TAKR will provide the Department of Defense with a true capability to lift enormous amounts of equipment at high speed.

LANDING CRAFT AIR CUSHION - LCAC

Mission:

To transport the assault elements of the Marine Amphibious Task Forces from ship to shore and across the beach.



CHARACTERISTICS

LENGTH:	87 FT 11 IN	DESIGN PAYLOAD:	60 Tons
BEAM:	47 FT	OVERLOAD PAYLOAD:	75 Tons
INSTALLED POWER:	12,444 SHP	SPEED:	40 KTS with payload
CARGO DECK AREA:	1,809 SQ FT	RANGE:	200 NM with payload

FUNDING REQUEST	NUMBER	COST	BUILDER
FY 1984 PROGRAM:	6 CRAFT	$161.1 MILLION	BELL AEROSPACE/TEXTRON

LANDING CRAFT AIR CUSHION—LCAC

The LCAC provides the Navy/Marine Corps Amphibious team with a high speed craft, less restricted by surf and beach conditions than conventional craft, which can lift heavy equipment across the shore from over the horizon. This craft greatly expands the amount of coastline across which amphibious forces can be landed, and in coordination with helicopter-borne assault forces, greatly increases the maneuverability and tactical options of our Amphibious Forces.

The six craft appropriated over the last two years are under contract with Bell Aerospace/Textron. The company has completed construction of a new facility which is designed for series production of LCAC in the most efficient possible manner.

The request for six LCAC in fiscal year 1984 of $161.1 million includes $29.5 million in advance procurement for the 12 craft required in fiscal year 1985.

CRAFT

Program	Quantity	Funding (millions)
LCAC	6	$161.1
LCM-8	18	15.0
PB (M)	1	15.0
YTB	9	43.2
YP	5	22.5
YD	5	30.6
YC	14	8.0

CRAFT

The fiscal year 1984 request includes $119.3 million for service craft and $176.1 million for landing craft. The Landing Craft Air Cushion (LCAC) request for $161.1 million is noted above. In addition, $15.0 million is requested to purchase the final 18 LCM 8 required for the TAK convert and charter program. The $119.3 million for Service Craft will be used to procure fourteen barges (YC), five floating cranes (YD), five training craft (YP), nine large tugs (YTB) and one Patrol Boat (Multi-Mission) (PBM).

Other shipbuilding, fiscal year 1984

	Millions
Outfitting	$204.2
Post delivery	124.2
Cost growth	674.7
Escalation	375.6
Strategic sealift	31.0
Net funding requirement	1,409.7

COST GROWTH/ESCALATION

The $674.7 million reflected in this year's budget request as cost growth derives from several sources. As previously mentioned, the largest part is the $436.0 million required to complete the fiscal year 1981 Trident SSBN as the lead D-5 configured ship. Other requirements are $107.3 million for the fiscal year 1982 CG 47 second source costs, $21.3 million for the fiscal year 1975 Trident, $52.2 million for the fiscal year 1976 Trident, $29.9 million for the fiscal year 1977 Trident, $3.0 million for the fiscal year 1978 Trident and $25.0 million for the fiscal year 1983 SSN 688s. Escalation requested in the fiscal year 1984 budget is as follows: $10.0 million for fiscal 1977 Trident, $5.2 million for fiscal year 1977 SSN 688, $52.4 million for the fiscal year 1978 Trident, $.7 million for the fiscal year 1978 SSN-688, $28.9 million for the 1979 FFG 7, $5.4 million for the 1980 CVN, $15.9 million for the 1980 SSN 688, $15.9 million for the fiscal year 1981 SSN 688 and $62.4 million for the fiscal year 1982 CG 47. The fiscal year 1983 additional funds are required because the DoD failed to provide adequate escalation to match the assignment of DoD January 1982 economic indices, although the total amount has been reduced to reflect the new January 1983 indices. These funds are $1.1 million for SSN-688, $4.6 million for Trident, $82.8 million for CVN, $7.3 million for MCM, $5.7 million for FFG, $76.3 million for CG 47, and $1.0 million for the LSD 41 program.

STRATEGIC SEALIFT

The Ready Reserve Force (RRF) is a subset of the National Defense Reserve Fleet which provides timely sealift capability to promptly outload and transport those forces deployed in a contingency or reinforcement scenario. Many U.S. Flag merchant ships are removed from service and sold for their scrap value each year. Many of these ships have years of servicable life remaining but have become commercially uneconomical to operate under current market conditions. This funding line of $31.0 million will permit the government to purchase several usable ships at or slightly above their scrap value for retention in the Ready Reserve Force. No quantity is given in the estimate since purchase price is a dynamic combination of availability, condition and scrap market conditions.

OUTFITTING/POST DELIVERY

The fiscal year 1984 request includes $204.2 million for the outfitting of new ships. Post Delivery requirements for the correction of construction and acceptance trial deficiencies total $124.2 million.

This concludes my presentation. I thank you for this opportunity to present to you the Navy's shipbuilding plan and I hope that it will be helpful to you in your forthcoming deliberations. This committee has historically been a major factor in support of a strong Navy and I earnestly requests your continuing support.

Senator COHEN. Thank you very much.

Are there any questions?

Senator **Wilson**. Admiral Walters, how is this deployed? In other words, what do you have to do to surround this with adequate protection? Is this part of the carrier task group?

Admiral **Walters**. This ship would normally operate in what we call an underway replenishment group. It would operate in conjunction with ammunition ships, stores ships and would be provided a destroyer-frigate screen and be generally under the umbrella probably of maritime patrol air when it is apart from the battle group.

These kinds of ships are used to bring oil also from advanced bases to replenish the station ships that are operating with the carrier battle group. So, on occasions they might operate independently in the shuttle role, but in wartime would be escorted.

Senator **Wilson**. And they make 20 knots?

Admiral **Walters**. They make 20 knots, yes, sir.

Senator **Wilson**. What does the capacity of the 180,000 barrels translate into in terms of refueling?

Admiral **Walters**. It translates into an ability to refuel a carrier battle group for a period of 3 days three times. That would be the equivalent of 9 days' operation. That is what it is sized to do.

The previous oiler we built was a little bit smaller capacity and will not do that.

Senator **Wilson**. How many of these do you have?

Admiral **Walters**. We have two authorized thus far. These three will make the first five of what we had planned to be a multiship procurement plan.

Senator **Wilson**. You then deploy those in such a way that they have access wherever your carrier battle groups are going to be?

Admiral **Walters**. Yes, sir. They are deployed to be stationed to support whatever naval forces we have at sea. Generally it would be carrier battle groups, but it could be a surface action group, an amphibious force.

Senator **Wilson**. You would have one of these for each of the major fleets?

Admiral **Walters**. No, sir. As I mentioned before, we have station ships. We have a requirement to have seven AOR's which are combination oiler and stores ships and then we have the AOEs which are a combination of ammunition and oil, petroleum products, not just oil.

It also carries aircraft fuel. Those ships are multiproduct ships and are fast, the AOE's particularly, 26- to 27-knot ships. The idea is for each two-carrier battle group to have an AOR and an AOE steam with the battle group.

The TAO then will be used to replenish the station ships. We have designed the TAO so that in case we lose the station ship, which will be in a higher threat area with the battle group, that they at least have the capability to go in and replenish the battle group directly.

Of course there will be other occasions on which they will operate in an underway replenishment group where the combatants will come to them for fuel and they will operate in conjunction with the ammunition ships and the stores ships.

It is a one-stop deal for a destroyer or cruiser, for example, to come in and refuel and replenish in that way.

Senator **Wilson**. Thank you.

Senator **Cohen**. Senator Nunn.

Senator **Nunn**. Thank you, Mr. Chairman.

Mr. Secretary, first, a question on the Navy fiscal 1984 budget request.

It is my understanding it includes $150 million for cost growth and escalation, $674 million for cost growth, $375 million for escalation.

Could you explain to us what this is for in terms of whether it is for cost growth that is known now or whether it is a contingency possible cost growth and escalation that is unknown.

Mr. **Sawyer**. I will be happy to, sir.

Senator Nunn, let me deal with each in turn. With regard to the cost growth, this does cover known items as opposed to future contingencies.

Senator **Nunn**. This is cost growth and escalation. Let us say cost growth you are talking about now, cost growth that has already occurred.

Mr. **Sawyer**. This is cost growth which we expect will occur or anticipate occurring with regard to ships that are currently under contract. Then I can go through the individual items.

$106.4 million of cost growth associated with the fiscal years 1975 to 1978 Trident *Ohio* class submarine which reflects the negotiations and final contract modifications that were set, with Electric Boat in August 1982 on the first seven Tridents. We had already requested this in the fiscal year 1982 supplemental. It was decided by Congress to defer until the next major appropriation year.

The major area of cost growth is $436 million for putting the D-5 Trident II missiles into the fiscal year 1981 *Ohio* class submarine. Originally, the contract had been negotiated around the C-4 Trident I missile. As part of the Secretary of Defense's letter to the Congress last year be proposed to accelerate the D-5 installation in new construction submarines. This now becomes the first ship—being new construction as opposed to the prior plan, where it would essentially be a backfit of already delivered *Ohio* class submarines.

Senator **Nunn**. I will have several other questions so I don't want to take too much time on the D-5 missile. You can furnish for the record the various components of that cost. Essentially it is growth that you really are certain of or substantially certain of?

[The information follows:]

The $436 million requested to complete the D-5 modification on SSBN-734 is comprised of the following: design—$67 million; ship construction—$67.9 million; and strategic weapons system costs—$300.1 million.

Mr. **Sawyer**. Yes, sir.

Senator **Nunn**. What about the escalation, $375.6 billion?

Mr. **Sawyer**. The escalation line item really covers the change in estimated inflation indices between last year and this year, recognizing in the principal areas that the escalation which was given the Navy was essentially less than for our various shipbuilding programs, less than the revised indices had indicated.

Senator **Nunn**. Was that primarily inflation?

Mr. **Sawyer**. It is all inflation and the assumptions of inflation in the out years, yes, sir.

Senator **Nunn**. When you add this new hunk of money in, what is your inflation assumption including that hunk of money in your shipbuilding program?

Mr. **Sawyer**. I may have to submit that for the record, Senator, because it varies each year.

Senator **Nunn**. Could you submit that for the record.

Mr. **Sawyer**. Yes, sir. We have a stream assumed escalation in both labor and materials, and those streams vary from one year to the next.

[The information follows:]

Escalation

The escalation request in the fiscal year 1984 Budget of $375.6 million is required to fully fund fiscal year 1983 and prior year ships. Shortly before the submission of the fiscal year 1983 Budget, the Department of Defense issued new inflation indices. The very short turnaround period provided to assess the impact of these new higher indices allowed only a brief analysis on a total appropriations level of the additional escalation required. When later calculations based on analysis of the impact on each individual ship type were completed, it became clear that the amount of escalation provided in the fiscal year 1983 Budget would not be sufficient to meet total escalation requirements. The new DOD indices incorporated in the fiscal year 1984 Budget reflect the lower actual inflation experienced by fiscal year 1982 and also assume lower outyear inflation rates than the indices used for the fiscal year 1983 Budget. The fiscal year 1984 escalation request results, despite the new lower rates, largely because the entire escalation requirement was not provided in fiscal year 1983. Adjustments have also been made to reflect the impact of actual contractor expenditures as opposed to previous estimates of the time expenditures would occur. The fiscal year 1984 escalation request reflects the funding required to fully fund the latest approved OSD/OMD indices for all fiscal year 1983 and prior year programs. The following inflation assumptions were used in developing escalation requirements for ships in the fiscal year 1984 shipbuilding program as well as for the fiscal year 1984 escalation line item:

JANUARY 1983 FORECAST

	50/50	Labor	Material
1983	6.5	6.6	6.4
1984	6.9	7.0	6.8
1985	6.4	6.6	6.2
1986	6.1	6.3	5.9
1987	5.8	6.0	5.6
1988	5.8	6.0	5.6

Senator **Nunn**. Several other questions on that point I will submit for the record. We will get back to you.

I want to ask one other basic line of questions.

Admiral, the press has reported on the new defense guidance, it includes charts similar to the one that the Office of the Secretary of Defense testified about in the last 2 years. It refers to the levels that are now planned and then it refers also to the Joint Chiefs' request, what they really need in that force structure to meet the overall strategy as they understand it.

Last year Admiral Trost indicated in testimony it would take a substantially higher number of battle groups that would implement strategy than were in the 5-year plan.

This year, according to the press report, it says in the 5-year plan we have 15-carrier battle groups and that the Joint Chiefs of Staff are recommending a higher number.

Is that essentially correct?

Admiral **Walters**. That is essentially correct, yes, sir.

Senator **Nunn**. Is that what has been known by the Joint Chiefs or designated by them as a reasonable assurance force?

Admiral **Walters**. I believe that is the term that they referred to, yes sir.

Senator **Nunn**. Did Secretary Lehman testify that the carrier that was originally in the Navy 5-year plan was not now required? Was that the Navy's position?

Admiral **Walters**. You are referring to the ship that was in the out years of the current 5-year plan?

Senator **Nunn**. That is right.

Admiral **Walters**. We have determined that on the basis of the two carriers that were appropriated last year that we will not have a requirement for another new carrier before 1990.

Senator **Nunn**. So, the Joint Chiefs recommended more carrier battle groups and we have 15. We don't have any more in our plans for 5 years, is that right?

Admiral **Walters**. I think you have to understand the Joint Chiefs' requirement in almost every area exceeds that which we can budget for, carriers being only one example. They are looking essentially at an assurance force with minimum risk.

When the affordability issue comes in we inevitably will reach our ultimate requirements that we think are necessary to fight.

Senator **Nunn**. I understand that. I understand this is in the nature of a much reduced risk.

The question I want to ask you about is strategy. What are you assuming about the use of those carriers vis-a-vis Soviet land targets?

Are you assuming that your naval strategy, when you project 15 that we have in there now or the Joint Chiefs projection is going to be to take those carriers close to the Soviet Union and actually fight in close proximity to Soviet land-based air and going after the Soviet naval installations in the Soviet Union?

Is that part of the Navy strategy on which the force structure is based?

Admiral **Walters**. The naval strategy on which that is based is essentially in support of the national strategy. I think what you are referring to as to striking Soviet bases, and so forth, will be a matter of timing. It would be better if we addressed that during closed session.

Senator **Nunn**. Let me ask you one other question.

How many ships are in this year's 5-year plan for building? How many new ships are in this 5-year plan?

Admiral **Walters**. Five conversions and one acquisition for a total of 23 ships.

Senator **Nunn**. That is not the 5-year plan.

Mr. **Sawyer**. 124 new construction in the 5-year plan submitted before you.

Senator **Nunn**. How many were in last year's 5-year plan?

Mr. **Sawyer**. 133.

Senator NUNN. Nine ships have been cut?

Mr. SAWYER. Yes.

Senator NUNN. You shifted gears?

Mr. SAWYER. Not only shifted gears, but we also have to look at the major conversions because that covers also certain SLEPS. We have 21 conversions in the fiscal year 1984 plan. Total construction and conversions total 145 this year versus 149 last year.

Senator NUNN. To boil that down, you help me because I know it is apples and oranges, you are sliding 1 year further out and you are backing 1 year you already have.

What is the difference in the Navy shipbuilding program if you compare what the Navy projected last year and what the Navy is now projecting this year?

What are the changes from what you would have anticipated last year.

Mr. SAWYER. I have the details here, Senator, again like my other response, it may take longer than you care.

Senator NUNN. I am really looking for the numbers.

Mr. SAWYER. We have slipped generally in certain areas. I will take some good examples.

The 963 clsss destroyers we had in the out years last year slipped out due essentially to affordability plus the fact that we have alternative construction and means to achieve those ends. The nuclear cruiser, which was a significant item, of course, was slipped out of the plan from last year to this year.

Basically, it slipped out on the issue of affordability. Until we evaluate what we receive for what we pay for a nuclear cruiser, we prefer to continue to build conventionally powered ships.

Actually, some of the work has been accelerated. In the amphibious area, the LHD class we are now proposing—ships that you see the first of this year, the LHD—an LHD is procured every other year through the FYDP.

Last year there were only two in the program. It is a question of certain pluses and minuses generally interposed in the out years, oftentimes looking at it from the standpoint of affordability.

The numbers roughly approximate, and the total count as we look toward the basic objective of the 600-ship Navy and the method of counting remains unchanged.

Senator NUNN. You still have as a goal the 600-ship Navy?

Admiral WALTERS. Yes, sir, 1989.

Senator NUNN. 1989 is the time you will achieve that?

Admiral WALTERS. Yes.

Senator NUNN. That has not changed?

Admiral WALTERS. That is right.

Senator NUNN. It is still the Navy plan?

Admiral WALTERS. Yes.

Senator NUNN. Definitions are the same this year as last year?

Admiral WALTERS. Yes, sir. The ship counting method is still the same.

Senator NUNN. I have several other questions relating to delivery time I will submit for the record. Then I have a set of questions I would like to get your attention to. It is a very important area. It is a detailed area. I won't go into detail now. It relates to wartime stocks and ammunition.

I will submit that again for the record.

On the question of strategy I am just wondering, are we going to have, Mr. Chairman, any closed hearing on this whole area?

Senator COHEN. We do have a hearing set up.

Senator NUNN. On strategy and other things and it will be closed?

Senator COHEN. Yes.

Senator NUNN. I will direct my questions at that hearing.

Senator COHEN. Senator Quayle.

Senator QUAYLE. Could you provide us a list of the ships that are currently not under contract that are encompassed in this 600-ship Navy. You indicated earlier there were ships in the 600-Navy that were not under contract as of now.

Could we have a list of those?

Mr. SAWYER. Yes, sir. If you take a 5-year plan, the 1984 ships, the 1985 ships, and quite a significant fraction of the 1986 program are all ships essentially that are not contracted for at the current time that would count toward the 600-ship objective.

[The information follows:]

Ships not yet under contract [1]

[By fiscal years]	*Total*
BB—1985 (1), 1986 (1)	2
CG 47—1983 (3), 1984 (3), 1985 (3), 1986 (3)	12
DD 651—1985 (1)	1
SSN 688—1984 (3)	3
SSBN—1984 (1)	1
MCM—1983 (1), 1984 (4), 1985 (4), 1986 (4)	13
MSH—1984 (1), 1986 (4), 1987 (4)	9
LHD—1984 (1)	1
LSD 41—1984 (1), 1985 (2), 1986 (2), 1987 (1 of the 2 1987 ships)	6
AE—1986 (1)	1
AFS—1987 (1)	1
AOE—1986 (1)	1
TAGOS—1985 (2), 1986 (2), 1987 (2)	6
TAO—1984 (3), 1985 (4), 1986 (3 of the 4 1986 ships)	10
TAFS—1984 (1)	1
Total	68

[1] Ships in the 600 ship Navy by 1990 that are not yet under contract.

Senator QUAYLE. Admiral Walters, when are we going to go to this [deleted] carrier task force? Is there a given time schedule for this?

Admiral WALTERS. No, sir, we do not have a time schedule to go to it. Obviously, it takes about 7 years to build a carrier. So we do not have a time schedule yet.

Senator QUAYLE. Was there a general time schedule? In the year 2000? How rapidly are we pursuing the carrier task force shipbuilding project?

Admiral WALTERS. We have a plan to get to the 15-carrier level. Beyond that we don't really have a plan that is definitive.

Senator QUAYLE. If we don't have a plan, what is the [deleted] carrier task force? We heard about it last year. It has now come up according to the press reports.

Is this something to chat about? Are we serious about it?

Admiral WALTERS. Yes, sir, we are serious about it. I can best describe it by saying if you ask all of the commanders in chief of the various joint forces what they need to prosecute a conflict against the Warsaw Pact in their area, they will generate a certain number of requirements for divisions, squadrons of aircraft, and ships.

Those are then brought together and reviewed by the Joint Chiefs of Staff. They look at it from the standpoint of what is the size of this force that will assure victory with minimum risk. Those requirements almost inevitably will be much greater than the budget will allow us to buy.

It doesn't mean that those requirements are not real, because on every occasion that this Nation has gone to war, mobilization has reinforced our military construction, procurement, and manpower programs immensely to meet those kinds of requirements or to get toward them versus what we are willing to expend in peacetime.

Senator QUAYLE. Will the LHD-1 carrier get us there?

Admiral WALTERS. No, sir, not even there.

Senator QUAYLE. Are the LHD-1's included?

Admiral WALTERS. We have experimented some with carrying V/STOL type aircraft in the Marine Corps. The LHD-1 which is the lead ship of this budget and which has enjoyed the support of this committee will be able to handle a squadron at least of AV-8B V/STOL aircraft and has good sea control and strike capability.

Senator QUAYLE. In the concept of the carrier task force, are you talking about the LHA?

Admiral WALTERS. No, sir. Those are amphibious.

Senator QUAYLE. This is over and above amphibious carriers?

Admiral WALTERS. Those are amphibious which will have a convertible mission.

Senator QUAYLE. This increased carrier task force would give you assured victory? Is that the terminology you used?

Admiral WALTERS. If we had increased carrier battle groups, we would have reasonable assurance of having the force levels that the commanders in chief or the joint commanders in chief think are necessary to win a war.

Senator QUAYLE. What do we have in that terminology with the 15-carrier task force?

Admiral WALTERS. We have a risk.

Senator QUAYLE. A high risk?

Admiral WALTERS. It is the minimum acceptable force level for the Navy to carry out its commitments.

Senator QUAYLE. A minimum risk?

Admiral WALTERS. No, sir, not minimum risk. The minimum essential force to carry out our mission.

Senator QUAYLE. Carry out the mission. That would be to be able to win on the battlefield, is that right or not?

Admiral WALTERS. It is a risk force. That is the minimum number with which you can carry out any commitments.

Senator QUAYLE. An increased carrier task force would be virtually no risk?

Admiral WALTERS. I wouldn't say no risk. It gives you reasonable assurance that you can carry out the Navy's part of the conflict successfully.

Senator QUAYLE. I was looking through this and I notice combat stores ship TAFS. The Navy is purchasing an existing ship from the RFA which I guess is the Royal Navy?

Admiral **Walters**. Yes, sir.

Senator **Quayle**. Why are we purchasing this ship from the British and could they not use that to give us support? Would that not be a preferable way to try to get some of the allied contribution that we are concerned about?

Admiral **Walters**. I think the British are giving us some allied support by virtue of the sale price they are offering for that ship. They are in the process of reducing some of their forces and they have three ships of this class which they were going to put out of service. We have previously, with congressional authorization and appropriations, purchased two of these ships. This is the third and last one.

It is a remarkable bargain, $16 million for this ship which is compatible with replenishing our ships. It fulfills a need in the stores ship area that we have and will make it unnecessary for us to build another one of those ships in 1986 or 1987 and will save us literally millions and millions of dollars.

With this last ship we will also get all the propulsion spares that go with it. In the other two ships we have already bought we have made minor conversions to bring them fully to our standard and they are operating with the fleet and the fleet commanders are delighted with them. We think this is the best bargain on the street from a good ally.

Senator **Quayle**. One final question, Mr. Chairman, along the lines of you and Senator Nunn and others.

COST GROWTH/COST OVERRUNS

There is an incredible amount of interest in cost growth and the problem we have with cost overruns and basically cost growth.

Do you have any suggestions of what we could do? I am interested if in fact when they have a cost growth, do they actually realize more of a profit? Is there profitability in that cost growth and, if there is, should we have some sort of penalty or denial of profit when it goes over the original cost?

Aren't there some other measures that we could take that would trigger or at least try to get away from the problem we currently have?

Mr. **Sawyer**. First of all, we need to define our terms very carefully because cost growth, per se, is not necessarily bad. Overruns is a term which normally has a perjorative connotation. My point is, our cost growth this year is approximately $600 million, the overall majority of which, something like $550 million, consists of two items.

One is the decision to accelerate the D–5 introduction into a new construction submarine of the *Ohio* class. That is a decision we are taking. So it does not represent an overrun of a contract or the fact that the contractor blew the job. Many of our cost growth items fall into that category.

The other significant growth this year is for the second-source start-up cost for the Aegis cruisers. It is a cost-growth item to that particular ship, the first ship of the class that would be going to the contractor, but it is a step which we feel in the long run is going to show real savings for the program.

Getting back into the issue of overruns, we have tried to implement a number of initiatives, recognizing that when you are starting to build the ship of any program—all the before unknowns are known, before all our problems are solved, let alone even known—the job tends to take somewhat longer and cost somewhat more than what you originally anticipated.

We use a form of contract called the cost-plus-award fee. The concept there is that the award fee really is a large portion of the contractor's profit. Under that type of contract, it is our judgment of how well he performs. We specify the criteria of performance at the outset. Then he is judged quarterly by a board as to his performance. I think it is a form of contract which really has proven itself very well.

We have tried other steps years back when we tried firm-fixed-price contracts, for example, for high-risk programs. All this leads to is claims, everybody is unhappy and there is delay in ships being delivered because the contractor is losing more money, and he is spending more time in court than he is in building ships.

As the program matures, and particularly as the unknowns become known and the problems become certainly solved, we like to gravitate the contractor toward a more firm fixed-price type of contract.

Earlier I was discussing with Senator Cohen the use of the 50–50 share line, which is one I think works very well for our complex program. For the simpler ships we will start with a very tight share line and fixed-price incentive and in many cases go to firm fixed price.

So, there is no one good way to contract, Senator. It is a highly complex problem. We think we have had a pretty good record here the last couple years and, looking forward, I think we are going to see that we have a pretty good handle on the problems.

That does not mean that we are not going to have overruns or we are not going to have problems. I explained earlier that with 110 ships under contract I would be surprised if we didn't have. At least we are getting the ships out, the vast majority of them, on time or ahead of schedule.

As the discussion earlier with regard to the *New Jersey* indicated, we were able to bring her in to those estimates.

I don't believe in an overly tough, perjorative approach to our contractors. We tried that in the decade of the seventies. All that led to was contractors losing money, and the public absolutely convinced that the Navy did not have a handle on its management and know what it was doing, and we lost ships because of that.

FIXED-PRICE CONTRACT

Senator **QUAYLE**. You think we could move more toward a firm-fixed-price contract in your opinion?

Mr. **SAWYER**. I wouldn't move on our ship contracts. Let us take the carriers, for example. We have a contract that will amount to $7 billion. Actually the shipbuilders, with escalation, probably $4 billion over a decade of performance. With the uncertainties, the unknowns, that are there, if we tried to wrap that up and say firm fixed price—if the contractor had to cover all of those uncertainties in his contingency—we could not afford to buy the ship and he would be a damn fool to even try to consummate a contract on any number he set.

The risks are too great. The fixed-price incentive is a way in which there is at least equitable adjustment. I think it is fair because generally if there is an overrun or problem, particularly with our better contractors, it is not because he is a dolt or because he is bad. It is a lot of the time due to other things in the economy—the subcontractor did not get the material there, or the contractor had a big increase in energy cost because of, for example, an oil crisis.

Whatever the reasons are, there is allowance for some equitable adjustment. In cases of smaller contracts, where, in some of our small business situations many times we find ourselves in hot water because of a really poorly performing contractor, we have plenty of remedies with our laws and regulations to be able to handle that kind of problem.

Senator COHEN. Senator Levin.

Senator LEVIN. Thank you, Mr. Chairman.

50-50 SHARING ON AIRCRAFT CARRIERS

On that point you say there is a 50-50 sharing on the aircraft carriers?

Mr. SAWYER. Actually the carriers are 70-30.

Senator LEVIN. Who gets the 70 and who gets the 30?

Mr. SAWYER. We get the 70. He gets the 30.

Senator LEVIN. We get 70 percent of the benefit if he comes in below the target price?

Mr. SAWYER. That is correct.

Senator LEVIN. If he comes in above the target price?

Mr. SAWYER. He gets 30 percent. We take 70 percent of it back.

Senator LEVIN. We get 70 percent either way?

Mr. SAWYER. That is right.

Senator LEVIN. One of the issues that we read about recently in the area of cost is an alleged $5 billion differential between what some of the staff of the Secretary of Defense estimated the shipbuilding program would cost and what the Navy estimated it would cost.

I am wondering whether or not there was such a difference in point of view between the Defense Secretary's office and the members thereof and the Navy.

Mr. SAWYER. There was for a time. We met and reviewed it at some length. This was mainly in the outyear areas, and what assumptions and conditions we were applying to our programs.

We have satisfied the Secretary of Defense and, I believe, all of his staff, to generally do more of their estimating on past performance as opposed to looking very carefully at some of the initiatives in the last couple of years.

Senator LEVIN. Were there independent cost estimates made by the Navy on the ships that were at issue in the dispute?

Mr. SAWYER. Independent cost estimates outside of our normal estimating operations?

Senator LEVIN. No; just the independent cost estimate that is supposed to be made on major weapons systems.

Were those independent cost estimates made on the ships where there was a difference between the staff of the Defense Secretary's office and the Navy?

Mr. SAWYER. These had been made before the controversy came up. I think there has been a lot of overplay in the press on the significance of that controversy. There was about a 1-week review.

One of the things we showed them was our recent performance in which we actually awarded our contract in 1982 and 1983 slightly under the estimate that the Navy had set.

I think we went through a record of 30 to 40 recent contracts amounting to some $5 billion to show that in fact the Navy's estimating techniques appeared to be right on.

Senator LEVIN. Are you doing independent cost estimates on major weapon systems?

Mr. SAWYER. Yes.

Senator LEVIN. My question is: Were those estimates made on whatever particular ships were at issue between the staff of the Defense Secretary's office and the Navy?

Mr. SAWYER. Let me check that specifically.

Senator LEVIN. Would you give us a list of ships that were at issue?

Mr. SAWYER. Yes, sir.

Senator LEVIN. Also provide independent cost estimates on the ships, and the final estimate which is in the budget for those ships.

Mr. SAWYER. Yes, sir.

Senator LEVIN. Thank you.

[The information follows:]

ESTIMATES ON SHIPS

Mr. SAWYER. Some OSD staff members questioned the difference between the Navy's May 1982 procurement annex, which contained many preliminary estimates, with the better estimates in the September 15, 1982, procurement annex. OSD questions were resolved by the Navy by describing the basis for all changes made; no independent cost estimates were made.

The entire fiscal year 1984 program was questioned initially.

The final cost estimate for the fiscal year 1984 ships is as shown in the President's fiscal year 1984 SCN budget presented to the Congress.

Senator LEVIN. Another subject on cost is the question of the leasing of ships.

Mr. SAWYER. Yes.

LEASING OF SHIPS

Senator LEVIN. Have we signed contracts on the 13 pre-positioning ships we are going to lease?

Mr. SAWYER. Yes, sir, we have.

Could I ask that we use the word "charter," please. There is a significant difference.

Senator LEVIN. I understand the difference. The IRS might say "lease" and you use charter. I will use charter. I don't mind your taking your position in front of the IRS. I am not sure we ought to be paying the contractors for the legal cost of challenging IRS opinion. I don't mind your challenging IRS opinion.

Mr. **Sawyer**. You understand that particular item is in the contract because we are expecting the full flow through of any savings that we will receive.

Senator **Levin**. We have a Joint Tax Committee estimate that it is going to cost the Government more to charter these ships than the Navy's estimated $270 million; about $20 million per ship times 13 comes out to roughly $270 million in cost which the Navy has not utilized in arguing for this program. This is cost to the Treasury.

I understand we are now going to be asked to lease some planes by the Air Force. Don't you think it is appropriate we consider the cost to the Treasury as well as the leasing or chartering cost?

Mr. **Sawyer**. Let me say this, Senator, because it is like any other major issue, it is pretty complicated.

We have no established routine at the present time. This is OMB, Treasury, certainly the Navy, with regard to exactly a convention as to how all the global costs and reflows are going to be analyzed.

We have used a certain approach. We have had it reviewed by Treasury and reviewed by OMB and they concurred it probably was the most reasonable way they knew of at the time.

One of our recommendations is that we need to establish some type of agreed convention for analysis. I take strong issue with the Joint Taxation Committee analysis because there are some very critical issues, if they look at this in a global context, that they didn't consider. They assumed that the reflow, for example, and these are actual taxes paid due to interest income, was double counting. It is not at all.

We have to look at the subtle tax implications. There are significant taxes that will be paid based on the interest income generated from the financing of that project.

Senator **Levin**. You made reference to an OMB report on this issue.

Mr. **Sawyer**. OMB has a standard convention for looking at property leases. As you know, leasing, in this case chartering, is not novel. We have done a lot of leasing in construction and in the Government.

Senator **Levin**. There is nothing inherently wrong with it. Sometimes it saves money and sometimes not. It depends on the facts. The tax aspect is very relevant.

Mr. **Sawyer**. Conventional analysis has not been considered in the past.

TAX IMPLICATION STUDY ON LEASE OF SHIPS

Senator **Levin**. Who is preparing the tax implication study so that we can know in the future whether to lease ships and planes or buy them?

Mr. **Sawyer**. At the present time I don't think we have taken that on in the executive agencies.

Senator **Levin**. Who should do it?

Mr. **Sawyer**. OMB.

Senator **Levin**. Are they doing it?

Mr. **Sawyer**. I don't believe so, not at the present time.

Senator **Levin**. I think it might be appropriate for us to consider, as a committee, whether we ought to ask OMB to look at it. You may be right that you are saving money. I don't know.

Mr. **Sawyer**. We feel strongly that we are because there were a couple of other areas that were not looked at. I think that very much relates to the overall economics of the equation.

One of the great savings we had in the ships themselves, and by virtue of the fact that in adopting this acquisition approach, which is a form of multiyear, we are going to get the ships up to a year earlier than we would otherwise have gotten them.

Senator **Levin**. I think we ought to ask the chairman whether he would consider requesting OMB to do the study which the Navy feels should be done on the tax implication of leasing these ships or any other equipment.

The computation by the Navy is that there are savings. The computation by the Joint Taxation Committee is that there are losses. We ought to know the facts before we approve this approach.

Mr. **Sawyer**. There is a big difference between leasing equipment and chartering a ship, where you are really chartering a transportation service. These ships come outfitted, manned, and so forth.

Senator **Levin**. Let me correct the record.

The Joint Taxation Committee concluded that chartering these ships costs us more than the Navy estimate. They may be right. They may be wrong.

The Navy suggested OMB try to give us some way of judging these arrangements, the chartering arrangements.

I think we ought to ask OMB for that.

Senator **Quayle**. I don't see any problem with that.

Senator **Levin**. I am wondering if you could give us an idea, historically, if you are able to, on what we have been doing over the decade of the seventies relative to acquisition of ships.

Are you familiar with the figures in the seventies regarding the ship acquisition?

Mr. **Sawyer**. Not in great detail, Senator.

MORE OR LESS TONNAGE IN THE SEVENTIES

Senator **Levin**. Is it your understanding that we added more tonnage or less tonnage than the Soviets in the seventies?

Mr. **Sawyer**. I will defer to Admiral Walters.

Admiral **Walters**. Yes, sir.

Senator **Levin**. Why don't we take a look at the open ocean combat ships, frigates.

Admiral **Walters**. If we look at open ocean conventional ships, you will find that they are—I have not gone all the way back through the seventies, but I did look at it from 1976 on.

In the combatants, for example, we know the Soviets have built about the same number.

Senator **Levin**. What size combatants?

Admiral **Walters**. I am talking about destroyers, cruisers, frigates.

Senator **Levin**. According to my figures, in the seventies we built fewer cruisers, but many more destroyers and frigates.

Is that not true?

Admiral **Walters**. No, sir. As I look at it, from 1976 to 1983 we built about the same number.

Senator **Levin**. I am talking about the seventies. You are talking about 1976 to 1983.

Admiral **Walters**. That is what I say. I don't go far enough back in the seventies.

Senator **Levin**. Would you supply those figures for the record?

Admiral **Walters**. I will supply it for the record for the decade of the seventies.

Senator **Levin**. The way you have it, both the decade of the seventies and 1976 to 1983 will be fine.

[The information follows:]

Between 1970 and 1979 the US produced 105 combatant ships and submarines displacing 739,010 tons, while the Soviets produced significantly more: 203 ships displacing 1,087,805 tons. US allies (NATO and three Pacific allies: Japan, Australia and New Zealand) produced 162 combatants displacing 430,079 tons, while non-Soviet Warsaw Pact countries produced 11 displacing 13,700 tons. It should be noted that between 1970–79 our allies built no ships of the types that form the backbone of naval battle forces (carriers and cruisers), and they built only a handful of nuclear submarines. Including amphibious ships, underway replenishment ships and large tenders, the US and its allies produced 341 ships, while the Soviets and their allies produced 308.

Navy figures comparable to those provided to Senator Levin by the Congressional Research Service are provided below for the record. The Navy figures are based on full-load instead of standard tonnages, and they group ships according to DIA categories. Two sets of totals are provided, one for combatants and one for combatants plus amphibious ships, underway replenishment ships and large tenders. (The last three types are sufficiently dissimilar in configuration from combatants that full-load tonnage totals combining the four types are misleading). Following the figures for 1970–79, a similar set of figures is given for 1980–82.

These figures do not include a significant part of the Soviet Navy for which the US Navy has no counterpart: a large force of patrol ships and craft, mine warfare ships and craft, landing craft, and miscellaneous auxiliaries. The Soviet Navy built 579 ships in these categories between 1970–79, while the US Navy built only 11.

United States, Allied, and Soviet naval ship construction 1970–79

[Number/tons]

Multipurpose aircraft carrier (CVN):	
USA	2/182,800
NATO	
USSR	
USSR	
Cruisers (CG/CGN):	
USA	5/53,300
NATO	
PAC	
USSR	[Deleted.]
Frigates (FF/FFG):	
USA	43/175,310
NATO	32/89,572
PAC	7/19,240
USSR	[Deleted.]
Ballistic missile submarine (SSBN):	
USA	
NATO	4/30,000
PAC	
USSR	[Deleted.]
Diesel attack submarines (SS):	
USA	
NATO	41/35,749
PAC	9/17,010
USSR	[Deleted.]

Auxiliary ships: Underway replenishment:	
USA	13/383,600
NATO	13/205,280
PAC	1/5,000
USSR	[Deleted.]
Total combatants 1970–79:	
USA	105/739,010
NATO	130/347,329
PAC	32/82,750
USSR	[Deleted.]
VSTOL aircraft carrier (CVH):	
USA	
NATO	
USSR	
USSR	[Deleted.]
Destroyers (DD/DDG):	
USA	25/195,000
NATO	25/121,964
PAC	5/26,700
USSR	[Deleted.]
Corvettes (FFL):	
USA	
NATO	20/26,844
PAC	11/19,800
USSR	[Deleted.]
Nuclear attack submarine (SSN, SSGN):	
USA	30/132,600
NATO	8/34,200
PAC	
USSR	[Deleted.]
Amphibious ships:	
USA	35/524,236
NATO	2/2,818
PAC	6/10,580
USSR	[Deleted.]
Auxiliary ships: Material support:	
USA	3/68,256
NATO	1/10,250
PAC	
USSR	[Deleted.]
Total number of ships:	
USA	156
NATO	146
PAC	39
USSR	[Deleted.]

United States, Allied, and Soviet naval ship construction 1980–82

[Number/tons]

Multipurpose aircraft carrier (CVN):	
USA	1/91,400
NATO	
PAC	
USSR	
Cruisers (CG/CGN):	
USA	1/11,000
NATO	
PAC	
USSR	[Deleted.]
Frigates (FF/FFG):	
USA	22/79,310
NATO	14/51,365
PAC	3/10,910
USSR	[Deleted.]
Ballistic missile submarine (SSBN):	
USA	2/33,200
NATO	1/7,700
PAC	
USSR	[Deleted.]

VSTOL aircraft carrier (CVH):	
USA	
NATO	2/39,620
PAC	
USSR	[Deleted.]
Destroyers (DD/DDG):	
USA	9/72,200
NATO	6/24,740
PAC	2/13,680
USSR	[Deleted.]
Corvettes (FFL):	
USA	
NATO	12/16,298
PAC	1/1,290
USSR	[Deleted.]
Nuclear attack submarine (SSN, SSGN):	
USA	11/66,000
NATO	2/6,465
PAC	
USSR	[Deleted.]
Diesel attack submarines (SS):	
USA	
NATO	6/8,024
PAC	3/5,550
USSR	[Deleted.]
Auxiliary ships: Underway replenishment:	
USA	4/110,000
NATO	2/35,600
PAC	
USSR	[Deleted.]
Total combatants 1980–82:	
USA	46/353,110
NATO	43/153,982
PAC	9/31,350
USSR	[Deleted.]
Amphibious ships:	
USA	1/39,360
NATO	1/1,600
PAC	1/5,800
USSR	[Deleted.]
Auxiliary ships: Material support:	
USA	5/114,400
NATO	
PAC	
USSR	[Deleted.]
Total number of ships:	
USA	56
NATO	46
PAC	10
USSR	[Deleted.]

ROLL-ON/ROLL-OFF SHIPS

Senator **Levin**. The roll-on, roll-off pre-positioning ships we are chartering, are we going to be able to utilize all of them in time of emergency?

Are we going to be able to commandeer them and act as owners of them?

Mr. **Sawyer**. Those ships under charter, or course, are available to us at any time at our base of choosing.

Senator **Levin**. We have emergency use of these in mobilization?

Mr. SAWYER. Yes. Our fleet merchant ships come under the selective reserve program and would be available to us.

Senator LEVIN. One other set of questions relative to the aircraft carriers.

You indicated that you don't recommend that we cancel the purchase of them. There is a convenience of the Government clause if we do decide to cancel them?

Mr. SAWYER. Yes, sir.

Senator LEVIN. Would you supply for the record the actual cost if we cancel one of the aircraft carriers? I am not talking about what we lose when we rebuild it later in inflated dollars.

Mr. SAWYER. Our clause "termination for convenience" does not spell out exactly what the cancellation costs are. That would probably involve hundreds of accountants, dozens of cost engineers, and also probably an army of lawyers.

I had to go through a termination once. If somebody were to tell me what the termination was at the start and what it was at the end, they would be totally wrong.

It was literally hundreds of millions of dollars with termination not only to the prime level, but the subtiers, sub-subtiers, rippling right through the whole economy of the United States.

Senator LEVIN. Some might even effect my own State?

Mr. SAWYER. Yes, sir, significantly.

Senator LEVIN. The Chair reminds me of that as often as he can. I always answer that I will take the consequences if I believe we ought to cancel something. I already have back home.

What are the arrangements in the contract for cancellation? How is it phrased? Do we pay the actual cost to the contractor and subcontractors if we cancel at our convenience?

Mr. SAWYER. Yes, sir. That is subject to audit. It is not only the actual cost. There is more to it than just the actual cost incurred because of the question of what you do with the material.

If he has, for example, turned down some work to make place for this work, there has to be an equitable adjustment there. There is a gray area that is not that auditable in terms of actual hardware delivered or work started.

Senator LEVIN. Someone else might have ordered an aircraft carrier from him that he lost the opportunity to build.

Mr. SAWYER. It is not so much the prime contractor. It is more the pump guy, the engine guy.

Senator LEVIN. Would you supply for us all the provisions of these contracts that relate to what we owe them in the event of cancellation and the language also about convenience to the Government?

Mr. SAWYER. Yes.

[The information follows:]

TERMINATION FOR CONVENIENCE OF THE GOVERNMENT (1974 OCT.)

(a) The performance of work under this contract may be terminated by the Government in accordance with this clause in whole, or from time to time in part, whenever the Contracting Officer shall determine that such termination is in the best interest of the Government. Any such termination shall be effected by delivery to the Contractor of a Notice of Termination specifying the extent to which performance of work under the contract is terminated, and the date upon which such termination becomes effective.

(b) After receipt of a Notice of Termination, and except as otherwise directed by the Contracting Officer, the Contractor shall,

(i) stop work under the contract on the date and to the extent specified in the Notice of Termination;

(ii) place no further orders or subcontracts for materials, services or facilities, except as may be necessary for completion of such portion of the work under the contract as is not terminated;

(iii) terminate all orders and subcontracts to the extent that they relate to the performance of work terminated by the Notice of Termination;

(iv) assign to the Government, in the manner, at the times, and to the extent directed by the Contracting Officer, all of the right, title, and interest of the Contractor under the orders and subcontracts so terminated, in which case the Government shall have the right, in its discretion, to settle or pay any or all claims arising out of the termination of such orders and subcontracts;

(v) settle all outstanding liabilities and all claims arising out of such termination of orders and subcontracts, with the approval or ratification of the Contracting Officer, to the extent he may require, which approval or ratification shall be final for all the purposes of this clause;

(vi) transfer title and deliver to the Government, in the manner, at the times, and to the extent, if any, directed by the Contracting Officer, (A) the fabricated or unfabricated parts, work in process, completed work, supplies, and other material produced as a part of, or acquired in connection with the performance of, the work terminated by the Notice of Termination, and (B) the completed or partially completed plans, drawings, information, and other property which, if the contract had been completed, would have been required to be furnished to the Government;

(vii) use his best efforts to sell, in the manner, at the times, to the extent, and at the price or prices directed or authorized by the Contracting Officer, any property of the types referred to in (vi) above, *provided,* however, that the Contractor (A) shall not be required to extend credit to any purchaser, and (B) may acquire any such property under the conditions prescribed by and at a price or prices approved by the Contracting Officer, and *provided further* that the proceeds of any such transfer or disposition shall be applied in reduction of any payments to be made by the Government to the Contractor under this contract or shall otherwise be credited to the price or cost of the work covered by this contract or paid in such other manner as the Contracting Officer may direct;

(viii) complete performance of such part of the work as shall not have been terminated by the Notice of Termination; and

(ix) take such action as may be necessary, or as the Contracting Officer may direct, for the protection and preservation of the property related to this contract which is in the possession of the Contractor and in which the Government has or may acquire an interest.

At any time after expiration of the plant clearance period, as defined in Section VIII, Armed Services Procurement Regulation, as it may be amended from time to time, the Contractor may submit to the Contracting Officer a list, certified as to quantity and quality, of any or all items of termination inventory not previously disposed of, exclusive of items the disposition of which has been directed or authorized by the Contracting Officer, and may request the Government to remove such items or enter into a storage agreement covering them. Not later than fifteen (15) days thereafter, the Government will accept title to such items and remove them or enter into a storage agreement covering the same; *provided,* that the list submitted shall be subject to verification by the Contracting Officer upon removal of the items, or if the items are stored, within forty-five (45) days from the date of submission of the list, and any necessary adjustment to correct the list as submitted shall be made prior to final settlement.

(c) After receipt of a Notice of Termination, the Contractor shall submit to the Contracting Officer his termination claim, in the form and with certification prescribed by the Contracting Officer. Such claim shall be submitted promptly but in no event later than one year from the effective date of termination, unless one or more extensions in writing are granted by the Contracting Officer, upon request of the Contractor made in writing within such one year period or authorized extension thereof. However, if the Contracting Officer determines that the facts justify such action, he may receive and act upon any such termination claim at any time after such one year period or any extension thereof. Upon failure of the Contractor to submit his termination claim within the time allowed, the Contracting Officer may determine, on the basis of information available to him, the amount, if any, due to the Contractor by reason of the termination and shall thereupon pay to the Contractor the amount so determined.

(d) Subject to the provisions of paragraph (c), the Contractor and the Contracting Officer may agree upon the whole or any part of the amount or amounts to be paid to the Contractor by reason of the total or partial termination of work pursuant to this clause, which amount or amounts may include a reasonable allowance for profit on work done; *provided,* that such agreed amount or amounts, exclusive of settlement costs, shall not exceed the total contract price as reduced by the amount of payments otherwise made and as further reduced by the contract price of work not terminated. The contract shall be amended accordingly, and the Contractor shall be paid the agreed amount. Nothing in paragraph (e) of this clause, prescribing the amount to be paid to the Contractor in the event of failure of the Contractor and the Contracting Officer to agree upon the whole amount to be paid to the Contractor by reason of the termination of work pursuant to this clause, shall be deemed to limit, restrict, or otherwise determine or affect the amount or amounts which may be agreed upon to be paid to the Contractor pursuant to this paragraph (d).

(e) In the event of the failure of the Contractor and the Contracting Officer to agree as provided in paragraph (d) upon the whole amount to be paid to the Contractor by reason of the termination of work pursuant to this clause, the Contracting Officer shall pay to the Contractor the amounts determined by the Contracting Officer, as follows, but without duplication of any amounts agreed upon in accordance with paragraph (d):

(i) for completed supplies or services accepted by the Government (or sold or acquired as provided in paragraph (b)(vii) above) and not theretofore paid for, a sum equivalent to the aggregate price for such supplies or services computed in accordance with the price or prices specified in the contract, appropriately adjusted for any saving of freight or other charges:

(ii) the total of—

(A) the costs incurred in the performance of the work terminated, including initial costs and preparatory expense allocable thereto, but exclusive of any costs attributable to supplies or services paid or to be paid for under paragraph (e)(i) hereof;

(B) the cost of settling and paying claims arising out of the termination of work under subcontracts or orders, as provided in paragraph (b)(v) above, which are properly chargeable to the terminated portion of the contract (exclusive of amounts paid or payable on account of supplies or materials delivered or services furnished by subcontractors or vendors prior to the effective date of the Notice of Termination, which amounts shall be included in the costs payable under (A) above); and

(C) a sum, as profit on (A) above, determined by the Contracting Officer pursuant to 8-303 of the Armed Services Procurement Regulation, in effect as of the date of execution of this contract, to be fair and reasonable; *provided,* however, that if it appears that the Contractor would have sustained a loss on the entire contract had it been completed, no profit shall be included or allowed under this subdivision (C) and an appropriate adjustment shall be made reducing the amount of the settlement to reflect the indicated rate of loss; and

(iii) the reasonable costs of settlement, including accounting, legal, clerical, and other expenses reasonably necessary for the preparation of settlement claims and supporting data with respect to the terminated portion of the contract and for the termination and settlement of subcontract thereunder, together with reasonable storage, transportation, and other costs incurred in connection with the protection or disposition of property allocable to this contract.

The total sum to be paid to the Contractor under (i) and (ii) of this paragraph (e) shall not exceed the total contract price as reduced by the amount of payments otherwise made and as further reduced by the contract price of work not terminated. Except for normal spoilage, and except to the extent that the Government shall have otherwise expressly assumed the risk of loss, there shall be excluded from the amounts payable to the Contractor as provided in (e)(i) and (ii)(A) above, the fair value, as determined by the Contracting Officer, of property which is destroyed, lost, stolen, or damaged so as to become undeliverable to the Government, or to a buyer pursuant to paragraph (b)(vii).

(f) Costs claimed, agreed to, or determined pursuant to (c), (d), (e), and (i) hereof shall be in accordance with Section XV of the Armed Services Procurement Regulation as in effect on the date of this contract.

(g) The Contractor shall have the right of appeal, under the clause of this contract entitled "Disputes", from any determination made by the Contracting Officer under paragraph (c), (e), or (i) hereof, except that if the Contractor has failed to submit his claim within the time period in paragraph (c) or (i) hereof, and has failed to request extension of such time, he shall have no such right of appeal. In any case where the Contracting Officer has made a determination of the amount due under paragraph (c), (e) or (i) hereof, the Government shall pay to the Contractor the following: (i) if there is no right of appeal hereunder or if no timely appeal has been taken, the amount so determined by the Contracting Officer, or (ii) if an appeal has been taken, the amount finally determined on such appeal.

(h) In arriving at the amount due the Contractor under this clause there shall be deducted (i) all unliquidated advance or other payments on account theretofore made to the Contractor, applicable to the terminated portion of this contract, (ii) any claim which the Government may have against the Contractor in connection with this contract, and (iii) the agreed price for, or the proceeds of sale of, any materials, supplies, or other things acquired by the Contractor or sold, pursuant to the provisions of this clause, and not otherwise recovered by or credited to the Government.

(i) If the termination hereunder be partial, the Contractor may file with the Contracting Officer a claim for an equitable adjustment of the price or prices specified in the contract relating to the continued portion of the contract (the portion not terminated by the Notice of Termination), and such equitable adjustment as may be agreed upon shall be made in such price or prices. Any claim by the Contractor for an equitable adjustment under this clause must be asserted within ninety (90) days from the effective date of the termination notice, unless an extension is granted in writing by the Contracting Officer.

(j) The Government may from time to time, under such terms and conditions as it may prescribe, make partial payments and payments on account against costs incurred by the Contractor in connection with the terminated portion of this contract whenever in the opinion of the Contracting Officer the aggregate of such payments shall be within the amount to which the Contractor will be entitled hereunder. If the total of such payments is in excess of the amount finally agreed or determined to be due under this clause, such excess shall be payable by the Contractor to the Government upon demand, together with interest computed at the rate established by the Secretary of the Treasury pursuant to Public Law 92-41; 85 STAT 97 for the Renegotiation Board, for the period from the date such excess payment is received by the Contractor to the date on which such excess is repaid to the Government; *provided*, however, that no interest shall be charged with respect to any such excess payment attributable to a reduction in the Contractor's claim by reason of retention or other diposition of termination inventory until ten days after the date of such retention or disposition, or such later date as determined by the Contracting Officer by reason of the circumstances.

(k) Unless otherwise provided for in this contract, or by applicable statute, the Contractor shall—from the effective date of termination until the expiration of three years after final settlement under this contract—preserve and make available to the Government at all reasonable times at the office of the Contractor but without direct charge to the Government, all his books, records, documents and other evidence bearing on the costs and expenses of the Contractor under this contract and relating to the work terminated hereunder, or, to the extent approved by the Contracting Officer, photographs, microphotographs, or other authentic reproductions thereof.

9. Final settlement

Upon final acceptance of the vessel(s), or in the event of the termination of this contract on such terms that none of the vessel(s) is to be completed, then upon such termination, the Contractor shall be entitled to receive the balance owing to it under this contract, such payment to be made promptly after the amount of such balance shall have been determined. The Contractor and each assignee under an assignment in effect at the time of final settlement shall execute and deliver at the time of and as a condition precedent to final payment, a release in form and substance satisfactory to and containing such exemptions as may be found appropriate by the Contracting Officer, discharging the Government, its officers, agents, and employees of and from liabilities, obligations, and claims arising under this contract. The Contracting Officer may authorize partial payments on account of any such balance to be made in advance of final settlement. If this contract shall have been terminated in whole or in part, any such release shall also contain a release of all claims against the Government arising out of or by virtue of such termination.

Senator **Levin**. Admiral Walters, would you also supply for the record the British Navy's figures on reducing their numbers?

Admiral **Walters**. Yes, sir.

Senator **Levin**. Could you give us the British Navy 5-year plan?

Admiral **Walters**. I will try, yes, sir.

Senator LEVIN. I have some good friends who will help you out if you have trouble.

Are they reducing the size of their Navy? I mean voluntarily. I am not talking about the Falklands.

Admiral WALTERS. Prior to the South Atlantic conflict they made a major decision, which was debated quite considerably, at least in naval circles by our commander in chief, Atlantic.

I can provide that for the record and try to provide you with a 5-year plan that is current because they have revised that as a result of their experience in the South Atlantic.

Senator LEVIN. Are they still reducing the size of their Navy?

Admiral WALTERS. No, sir. They are striking a balance. It is sort of in between now.

Senator LEVIN. It would be helpful if you would.

Thank you.

[The information follows:]

UNITED KINGDOM GENERAL PURPOSE FORCE PROCUREMENT

A special Defense White Paper released on 14 December 1982 which modifies the 1971 Defense Program White Paper ("The Way Forward"). It announced plans to improve British military capabilities in the wake of the Falklands war. The naval portion is highlighted below:

The two Type-42 destroyers (HMS *Sheffield* and *Coventry*) and two Type-21 frigates (HMS *Ardent* and *Antelope*) lost in the South Atlantic conflict will be replaced by five Type-22 frigates.

The amphibious ship (HMS *Sir Galahad*) sunk during the war will be replaced and the one damaged (*Sir Tristan*) will be repaired.

A yet to be identified point defense system will be installed on all three aircraft carriers, the amphibious assault ships (HMS *Fearless* and *Intrepid*), all Type-42 destroyers and the sole Type-82 destroyer (HMS *Bristol*).

A number of modifications to Royal Navy ships made for the war will be retained. In adddition to the introduction of the Phalanx close-in weapons systems to HMS *Illustrious* these changes include accelerated introduction of *Sea Skua* air-to-surface and *Sub Harpoon* submarine-to-surface anti-ship missiles and the addition of electronic countermeasures and chaff systems for defense against sea-skimming missiles.

A major Ministery of Defense study finding of the conflict was the lack of airborne early warning capability put the Royal Navy Task Force at excessive risk. To correct this, *Searchwater* radar and other electronic equipment will be installed on some *Sea King* helicopters.

In addition to replacing the aircraft lost in the fighting, the Minister of Defense plans to purchase an additional seven *Sea Harrier* aircraft, six *Sea King* helicopters; and five *Chinook* heavy lift helicopters, twelve used F-4J Phantoms will be purchased from the United States. Six surplus *Tri-Star* will be purchased for conversion to strategic tankers and will be RAF assets.

Another major decision stemming from the Falklands fighting is the cancellation of the sale of the carrier *Invincible* to Australia.

Five Type-23 frigate long lead items are on order.

The sixth unit of the SSN building program is scheduled for 1983-84 for a total planned inventory of 17. The purchase of one additional unit is under consideration.

An order for the first of a series of Type-2400 Diesel submarine is to be placed in 1983, and the first orders for a mine hunter class is to begin.

Senator QUAYLE [presiding]. Members of the committee have questions which will be submitted and they can be answered for the hearing record.

[Questions with answers submitted follow:]

Questions Submitted by Senator William S. Cohen

MISSILE CRUISERS AND DESTROYERS

Senator **Cohen**. Admiral Walters, provide a graph depicting the number and types of guided missile cruisers and destroyers in the fleet during the years 1980–1995, assuming that no additional such ships are authorized by Congress. State your assumptions regarding the expected service lives for these ships.

Admiral **Walters**. Figure 1 is a graphic representation of the numbers and types of guided missile destroyers and cruisers that would be in the fleet during the years indicated, assuming no new ship construction after the fiscal year 1983 authorizations. Expected service life of each class is based on the standard Navy planning factors of 30 years for surface combatants. Of exception are CGN 9 and CGN 25 which have been extended to fiscal year 2000.

Guided Missile Destroyers and Cruisers

(NO NEW CONSTRUCTION AFTER FISCAL YEAR 1983 AUTHORIZATIONS)

[Deleted.]

Figure 1

Senator **Cohen**. Admiral Walters, provide the same graph as above, assuming that the Navy's five year shipbuilding program is approved and funded.

Admiral **Walters**. Figure 2 depicts guided missile destroyer and cruiser force levels assuming we build to the fiscal year 1984 FYDP. The Navy's force level requirement is [deleted] guided missile destroyers and cruisers to support carrier battle groups, surface action groups, underway replenishment groups, and amphibious task groups. The current and projected shortfall in battle group AAW capability is one of the most significant issues facing Navy planners today. Block obsolescence of many guided missile destroyers and cruisers in the early 1990's will erode force gains resulting from the introduction of the CG 47 class *Aegis* cruisers. In order to retain assets, we are currently modernizing and upgrading the combat capability of many of those older guided missile destroyers and cruisers where it is cost effective to do so, with plans to extend their service lives. However, other combatants have become so manpower and maintenance intensive, and their combat systems have so aged that they are no longer effective against the threat. Consequently, they do not contribute to the mix of battle group capable combatants required. For this reason the capability inherent in the CG 47 class is required now within the carrier battle group. Authorization for the lead DDG 51 in fiscal year 1985 is also necessary because it is the replacement for those older guided missile destroyers reaching the end of their useful service lives in the 1990's. Building to the required balance of CG 47 and DDG 51 class ships to support the 15 carrier battle groups insures our naval forces of having the necessary warfighting capability against the expanding threat of the 1990's by increasing battle group flexibility, distributive offense, firepower volume and survivability.

Guided Missile Destroyers and Cruisers

(FISCAL YEAR 1984 FYDP FORCE LEVELS)

[Deleted.]

* Planned extension of service life for CG/SM-2/NTU equipped guided missile destroyers and cruisers.

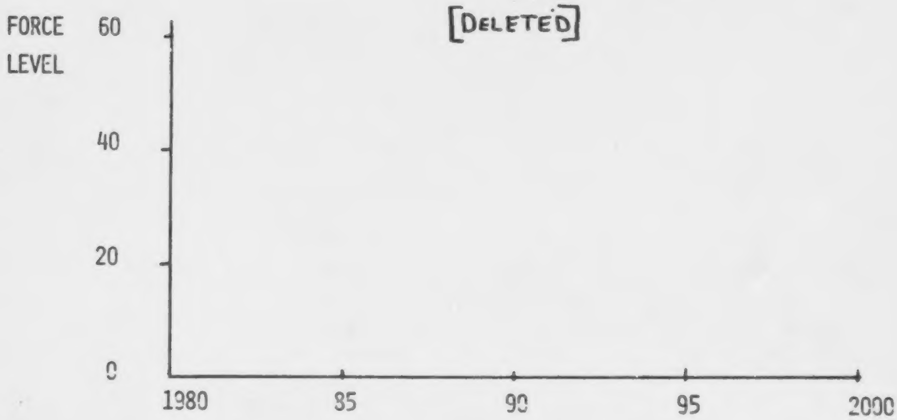
Figure 2

ATTACK SUBMARINE FORCE LEVELS

Senator **Cohen**. Admiral Thunman, provide a graph depicting the number and types (nuclear of diesel) of attack submarines in the fleet during the years 1980–2000, assuming that no additional submarines are authorized by Congress. State your assumptions regarding expected service lives for these ships.

Admiral **Thunman**. The graph is provided below. Since 1980, there have been five diesel-electric attack submarines in the force. Present plans call for all of these submarines [deleted]. The SSN 594 class and earlier ships have a service life of 25 years. The SSN 637 class and later ships have a service life of 30 years.

ATTACK SUBMARINE FORCE LEVEL
WITH NO AUTHORIZATIONS AFTER FY83

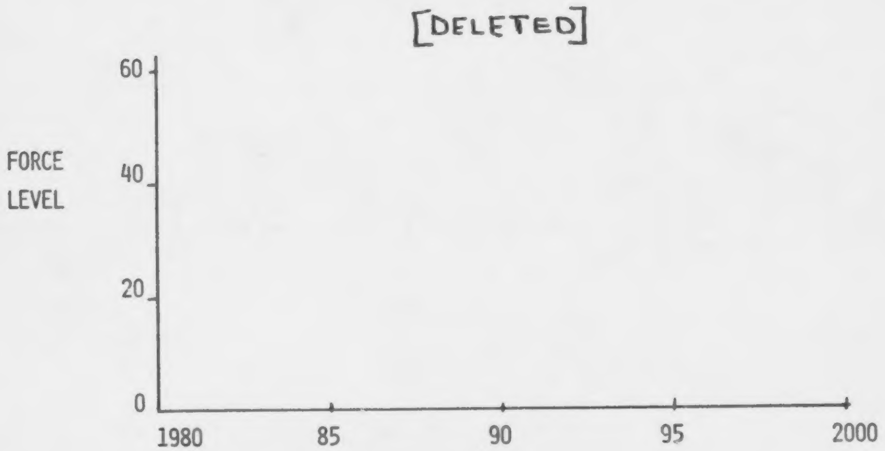


ATTACK SUBMARINE FORCE LEVELS

Senator **Cohen**. Provide the same graph as above showing the results of a decision to build 1, 2, 3 or 4 nuclear-powered submarines per year during the ten years fiscal year 1984–1993.

Admiral **Thunman**. The graph is provided below. Since 1980 there have been five diesel-electric attack submarines in the force. Present plans call for all of these submarines [deleted]. The SSN 594 class and earlier ships have a service life of 25 years. The SSN 637 class and later ships have a service life of 30 years.

ATTACK SUBMARINE FORCE LEVELS
WITH 1, 2, 3, OR 4 SSNs/YEAR AUTHORIZED AFTER FY 1983



DIESEL-ELECTRIC SUBMARINES

Senator **Cohen**. Please provide a classified statement of the Navy's position regarding the possible construction of diesel-electric submarines. Include whatever details are necessary to explain or justify this position.

Admiral **Thunman**. At the request of Congress, in both 1981 and 1982, the Navy conducted detailed evaluations of the diesel-electric submarine's potential for contributing to the overall effectiveness of our submarine force. These in-depth studies concluded.

After a force level of [deleted] SSNs is achieved, and under the assumption that a need for a fixed ASW barrier assignment exists throughout a conflict, a mixed force of SSNs and SSs provides a procurement cost savings and a marginal life cycle cost advantage over an all SSN force if forward basing is available. If under the same conditions, forward basing is not available, the mixed force provides a marginal procurement cost savings and no life cycle cost savings.

Under the assumption that submarines initially assigned to fixed barrier missions must also be used to react to a changing situation and fill gaps caused by attrition, there is a significant cost advantage to all SSN forces, even ones composed of more [deleted] SSNs.

The study's number of 115 SSNs was determined by considering a representative distribution of nuclear attack submarines and substituting diesel-electric submarines in fixed-barrier stations where the air threat was not significant and where ice coverage did not preclude snorkel operations. Assuming diesel-electric submarines were substituted in all possible barrier stations in the Atlantic and Pacific, the study concluded we would need a force of [deleted] SSNs and [deleted] diesel-electric submarines. Should the air threat prove more significant than assumed in the study, particularly in Pacific barriers [deleted] then additional SSNs and fewer SSs would be required. Consequently, [deleted] SSNs represents the absolute minimum SSN force that would be considered acceptable before it would be even marginally worthwhile to begin construction of diesel-electric submarines even under conditions most favorable to their employment.

Thorough evaluation of the West German Thyssen TR 1700 and HDW T2000 diesel-electric submarine designs by a team of Naval officers and submarine design engineers concluded that neither of them could satisfy U.S. requirements without extensive modifications which would have a substantial impact on the size, cost and construction period of those submarines. These modifications would also necessitate the transfer of an extraordinary amount of engineering, development and design technology. The transfer of this information would eliminate exclusive U.S. control of the advanced submarine silencing technology that currently provides much of the advantage U.S. nuclear attack submarines have over other nations.

No other current SS of foreign design would be suitable for use by the U.S. Navy without similar extensive design modifications.

The U.S. baseline SS feasibility design developed for the study, SS–X, cannot replace a modern nuclear submarine on a one-for-one basis even in the fixed barrier ASW mission; the one best suited to its limited capabilities. In all other missions, the SS–X was substantially less capable.

In the static barrier case with CONUS basing and the more realistic case where fixed barrier stations were not maintained continuously throughout a conflict, a mixed force of SSNs and SSs does not provide a cost savings. A marginal procurement cost savings, but no life cycle cost savings, is achieved only in the static barrier case when forward basing is available.

Our global strategy and the fact that our force level goals are well short of those considered necessary for a reasonable assurance of success dictate that we employ our limited submarine force flexibly. We must have the mobility, stamina and combat potential to respond on short notice to crises or conflicts virtually around the globe. The diesel-electric submarine does not provide this ability and consequently does not add to our overall force capability.

The studies concluded that a mixed force provides only a marginal cost savings, if any, after achieving a force level of [deleted] SSNs and then only in the static barrier case with forward basing. If forward basing were available, then clearly our allies, who have upwards of 140 diesel-electric submarines, would be able to contribute by operating these submarines in critical chokepoints near their homelands and in defense of their coastal waters.

In view of the growth of the Soviet submarine force and the qualitative improvements in their submarines, it is imperative that we invest our available resources where they can most effectively enhance our maritime strategy. Having carefully examined the relevant factors, I have concluded that procurement of diesel-electric submarines would not be cost effective in adding to or maintaining the overall capabilities of the U.S. submarine force.

Senator **Cohen**. Mr. Sawyer. Provide a classified and an unclassified statement which fully explains why the United States should make a continuing investment in guided missile warships, such as CG–47 and DDG–51.

UNCLASSIFIED

Mr. SAWYER. In the broadest terms the mission of the U.S. Navy is to deter any nation from initiating hostilities at sea. If that deterrence fails, our mission is to win. From this broad interpretation, the execution of naval missions can be divided into two functional parts—sea control and power projection. These functions in turn translate into at least five traditional warfare tasks including anti-air, anti-surface, anti-submarine, amphibious and strike warfare. It is from these missions and tasks that the requirements for guided missile warships, such as the CG-47 and the DDG-51 are derived. The past two decades have witnessed the emergence of the Soviet Navy as a mature and increasingly capable blue water navy whose capability to project power and presence on a global scale exists today and is steadily improving. Technological improvements over the last quarter century have escalated the threat from the manned bomber and conventional submarine launched torpedoes to a highly sophisticated mix of anti-ship capable missiles which can be launched from aircraft, submarines, surface ships and shore based sites.

The current inventory of guided missile cruisers and destroyers was, in the main, designed and built in the 1950s and 1960s. They were designed to fight and destroy manned aircraft and conventional submarines or early less sophisticated nuclear submarines.

The CG-47 and DDG-51 classes represent a quantum improvements in both defensive and offensive power. They are required not only to replace the current inventory as those ships reach the end of their effective service life, but also to provide the modern sensors and weapons required to defeat the current and projected threat.

Without a continuation of the CG-47 building program and the initiation in fiscal year 1985 of the DDG-51 class, the ability of the U.S. Navy to execute its deterrent mission is placed in serious jeopardy as is its ability to win if deterrence fails.

REQUIREMENTS FOR GUIDED MISSILE SHIPS

CLASSIFIED

The past two decades have witnessed the emergence of the Soviet Navy as a mature and increasingly capable blue water Navy whose capability to project power and presence on a global scale exists today and is steadily improving. Technological improvements over the last quarter century have escalated the threat from the manned bomber and coventional submarine launched torpedoes to a highly sophisticated mix of anti-ship capable missiles. These cruise missiles can be launched from aircraft, submarines, surface ships and shore-based sites. Flight profiles include [deleted]. The current inventory of guided missile cruisers and destroyers were designed and built in the 1950's and 1960's. They were not designed to fight and destroy the sophisticated anti-ship cruise missile.

It is against this array of operationally significant factors that the CG 47 and DDG 51 have evolved. They are the first of the next generation multi-mission guided missile ships. Their warfighting capability has been carefully developed to reflect planned employment with Carrier Battle Groups and Surface Action Groups. They balance both the defensive capability required by the threat as well as providing an offensive capability to strike at the source.

The CG 47 and DDG 51 incorporate the most advance technology available. They provide unique advantages over the older ships they will replace. Compared with current guided missile ships, the CG 47 and DDG 51 Class provide:

Greater area coverage [deleted].
Longer detection range [deleted].
Faster reaction time [deleted].
More simultaneous engagements [deleted].
Much better jamming resistance [deleted].

The CG 47 and DDG 51 provide the opportunity to enhance the dimension of our traditional surface combatant mission by providing significantly greater firepower volume, deliverable at long-range in support of both sea control and power projection roles. This capability is required now and will continue to be needed as we enter the 21st century. Failure to provide these ships will place in serious jeopardy the U.S. Navy's ability to win if deterrence fails.

Senator COHEN. Mr. Sawyer. Provide a comprehensive statement explaining why the Navy wants to purchase and convert a Combat Stores ship from Great Britain.

Mr. SAWYER. The Fleet Commanders identified AFS (Combat Stores Ship) shorfalls as early as 1978. Indian Ocean operations exacerbated the shortfall. The RFA *Lyness* and *Tarbatness* were leased and eventually purchased in 1982 to partially alleviate the shortfall. The Fleet Commanders further indicated a requirement for additional Combat Stores Ship assets to support contingency and emergent operations. The RFA *Stromness* offered for sale by the United Kingdom, represented the most cost effective means to improve the Combat Stores Ship posture, support the peacetime three ocean commitment with realistic deployment rotations and provide adequate assets to the Fleet Commanders.

The purchase of *Stromness* will culminate acquisition of the three-ship *Ness* class of British Stores Ships. For an average cost of approximately $12.OM per ship and upgrade investments of approximately $25.OM per ship, the United States will possess three fully capable Combat Stores Ships. To have obtained the same capability through new construction would have involved several more years and a cost in excess of $500M per ship.

SECOND SOURCE PROCUREMENT

Senator COHEN. Mr. Sawyer, is it possible to second source the procurement of major pieces of electronic equipment on board naval warships? What are the factors to be considered?

Mr. SAWYER. Yes it is possible to second source major pieces of electronic equipment. However, it is only reasonable to do so if it is economically and technically feasible. This is determined by several factors including the complexity of the system, the number of systems required, the existence of qualified firms and the degree of existing system component competition, which determines the potential for savings due to second sourcing.

Senator COHEN. Mr. Sawyer, in general, if one wants to second-source the procurement of complex electronic equipment, what requirements must be met?

Mr. SAWYER. In order to even consider second sourcing, the equipment must be a mature design in a proven production configuration. Given this, the economic and technical confirguation aspects can be considered. There must be enough units required to support the need for two manufacturers. If either manufacturer must operate at non economical production rates, there will not be savings. Likewise, if a large percentage of the components of the system are already completed, then the potential for additional savings due to second sourcing is significantly reduced. The amount of savings to be gained by second source competition should be enough to more than offset the start up costs associated with qualifying a second source. In addition to these economic requirements, the technical configuration and operability must be maintained at both sources. All of these factors must be analyzed in order to determine the viability of second sourcing complex electronic equipment.

Senator COHEN. Mr. Sawyer, if it is possible to second-source major items of electronic equipment, is it possible to second-source the radar and combat system intended for the DDG 51 after the construction program has matured?

Mr. SAWYER. Yes. However, our studies indicate that it will be extraordinarily expensive and have dubious payoffs—both economically and operationally.

INNOVATIVE MATERIALS

Senator COHEN. Is the Navy aggressively emphasizing, and more importantly, giving priority to a meaningful near term innovative Materials Development and design program, as stated in the CNO's February 25th testimony, which incorporates new and advanced composite materials to capitalize on the strength, lightweight, survivability and fire resistant qualities of such materials?

Mr. SAWYER. Innovative material development and design programs for new ships and submarines are being pursued aggressively as follows: High Strength Low Alloy (HSLA) steels are being applied for cost and weight savings; HY-100 steel is being certified for submarine construction; HY-100 steel is being proposed for research submarine construction; Lightweight steel panels are being developed to replace aluminum in ship superstructures; Weld fabrication improvement and cost reduction programs are underway; and Glass Reinforced Plastic (GRP) is being developed as a prime candidate for the MSH minesweeper construction and very large submarine bow domes.

Composites, primarily GRP (glass reinforced plastic) are being addressed in the following R&D programs: Structures, Hull Materials, Survivability, and Man Technology. Funding for NAVSEA Composites R&D in these four areas is approximately $3.06M for fiscal year 1983. Successful structural applications resulting from this research are within a five year time frame.

Senator COHEN. What percentage of the Navy's shipbuilding related budget (materials R&D/Man Tech) is devoted to accelerated development and production of such materials for early incorporation and use in envisioned new construction and retrofitting?

Mr. **Sawyer**. None of this composites research is part of the Navy's fiscal year 1983 Shipbuilding Budget of $12.7 Billion; the composites work is funded entirely from the RDT&E budget.

Major increases in funding of composites research have been proposed as New Starts in the Navy's Exploratory Development Program. For example, in the areas of Structures and Hull Materials, a Technical Option for composites research averaging $5.2M annually for a five year duration has been approved for a fiscal year 1984 start. In survivability, two Technical Options for composites research, averaging $4.3M annually (for five years) have been proposed for a fiscal year 1985 start. The application dates for less than 25 percent of these new starts is near term, less than five years, primarily due to their start dates.

Senator **Cohen**. In your judgement is this figure enough—or would it be desirable to have more funds devoted to this effort?

Mr. **Sawyer**. In light of restricted research budgets we have achieved a balanced priority and funding for innovative materials for ships and submarines. If there were an overall increase in material research funding, all innovative materials programs would benefit by an increase in scope and accelerated development.

AMPHIBIOUS SHIP SERVICE LIFE EXTENSION PROGRAM (SLEP)

Senator **Cohen**. Mr. Sawyer, the Navy is requesting $13.8 million in advance procurement funding nearly two years before the first ship is due to enter the LPD-4 Service Life Extension Program.

Normally, such a long lead period is reserved for procurement of items associated with nuclear-powered ships. Even in the CV Service Life Extension Program, advance procurement funds are requested only one year in advance.

Why do you need this funding for LPD service life extension 2 years in advance?

Mr. **Sawyer**. Unlike the CV SLEP, which has a 28 month availability, the LPD-4 Class SLEP will only be in a shipyard 12–14 months. Due to this short period of time, equipment to be installed must be dockside at the time the ship enters the yard to meet the land-on-ship date.

Senator **Cohen**. What specific items are procured with these funds?

Mr. **Sawyer**.

[In thousands of 1984 dollars]

Item:	*Cost*
Boiler long lead items	$230
Main condensers long lead items	230
Turbines long lead items	284
F.D. blowers long lead items	572
Ship system turbine generators	10,228
Switchboard, load center	506
Ship service switchboards	894
Radar distribution switchboard	284
Stern closure machinery	572
Total	13,800

Senator **Cohen**. What would be the impact of only one year advance procurement?

Mr. **Sawyer**. Deferral of advance procurement funds from fiscal year 1984 to fiscal year 1985 will eliminate the SSTG and switchboard alterations from the LPD-4 Class Service Life Extension Program as planned for fiscal year 1986. These alterations are essential core items since the ships are currently underpowered. Any deferral will seriously impact the resulting capability of the ships to adequately power existing and new systems scheduled for installation, particularly electronics, weapons, and LCAC systems.

Senator **Cohen**. How many years of life extension will the SLEP provide? How?

Mr. **Sawyer**. The SLEP will provide an additional 15 years of service life to the LPD-4 Class. At delivery each ship will have the operational characteristics existing at the start of SLEP except as modified by CNO-directed military improvements. Extensive repairs, replacements and life enhancing modifications are included and designed to extend the ships' life by 15 years so that they may operate during the extended life period with no more maintenance than is required under normal overhaul procedures.

Senator **Cohen**. What specific improvements will be achieved and how?

Mr. **Sawyer**. After SLEP the LPD-4 Class will have the capability to carry and operate two vice one LCAC. Selected fleet modernization alterations will be applied to bring each ship up to current operational requirements. Additionally, reviews of the status of ships will be conducted and selected modifications accomplished to enhance habitability and survivability.

SEALIFT

Senator **Cohen**. As a general observation, the United States is dependent on our U.S. flag merchant marine to sustain combat forces overseas for any lengthy period of time.

How does the Navy plan to use civilian ships in support of sustained military operations overseas?

Mr. **Sawyer**. Civilian shipping—composed of breakbulk cargo ships, containerships, RO/RO's and tankers—will be used as needed to meet the deployment requirements for sustained military operations overseas. These requirements include sealift of combat unit equipment, combat service support units, and resupply (including bulk POL) to meet all Services' needs. In addition, Navy will use some of these civilian ships to augment the Navy's Amphibious and Mobile Logistics Support Fleets.

Senator **Cohen**. Is the civilian merchant marine adequate to support U.S. military requirements? Is the civilian merchant manpower sufficient for our needs now and in the next decade or two?

Mr. **Sawyer**. In general, the answer to the first part of this question depends on the amount of sealift required, the time constraints on delivery, and the distances involved. For a minor deployment, the merchant marine is usually considered to be adequate; in a major worldwide mobilization deployment, such as during general war, the U.S. Merchant Marine is generally considered to be inadequate and in need of augmentation by allied shipping.

As for the second part of this question, at present, there are roughly 50,000 mariners in the U.S. work force. There are only about 16,000 seagoing positions in the U.S. flag fleet. This means there are approximately 34,000 mariners available for immediate employment. It may be safely concluded that at present there are sufficient mariners to man the current merchant marine, the Ready Reserve Force (RRF) and the rest of the National Defense Reserve Fleet (NDRF). For the future, as jobs continue to disappear, people will stop entering the maritime work force. Eventually, the surplus will shrink and there will be only enough mariners to meet the peacetime requirements for maritime labor.

Senator **Cohen**. What is happening to the industry?

Mr. **Sawyer**. The U.S. flag shipping and shipbuilding industry is suffering through a significant recession. As of March 1st, more than 58 dry cargo ships and 42 tankers were laid-up or inactive—this is almost one-fifth of the fleet. Many of these ships may not see service again because of their age and obsolescence. Shipbuilding, too, has been severely impacted by being unable to compete in the world market for commercial work and shipyards in the United States have become totally reliant on the Navy.

Improvements in the industry will depend in part on Congressional action on several maritime policy issues and in part on a willingness by the industry to seek and achieve competitive operating costs.

Senator **Cohen**. What needs to be done to strengthen the U.S. flag merchant marine? The U.S. civilian shipbuilding and repair industrial base?

Mr. **Sawyer**. The Administration has proposed five new elements for the third phase of its maritime promotion program that should significantly increase the capability of the American flag merchant marine to effectively compete in global trade. These elements allow building/acquiring foreign ships for operation under subsidy, use of tax deferred funds for such purposes, ending the three-year moratorium on the carriage of preference cargo by newly-reflagged vessels, repeal of the 50 percent ad valorem tariff on foreign repairs, and inducement of greater foreign investment (from 49 to 79 percent) in American shipping companies.

Additionally, it seems clear that U.S. flag operating costs must be brought more in line with the costs of the other industrial nations with whom we compete.

SHIP SYSTEMS ENGINEERING STANDARDS (SSES)

Senator **Cohen**. What is the status of the Ship Systems Engineering Standards (SSES) program, and in what direction is it headed? What has been done to respond to the direction of this program as laid down by the Senate Armed Services Committee Report of last year.

Mr. **Sawyer**. The SSES program is proceeding with the generic development of standards for the small, medium, and large size combatant ships, and incorporating these standards into the DDG 51 Class. Currently it is estimated that only the standards for the weapon modules will be ready and these will be incorporated into the DDG 51. The completion and testing of the weapon module standards for DDG 51 is the highest priority effort in the program. The second priority is the completion of the remaining standards and their incorporation in what the Navy sees as the first fully variable payload ship, the Frigate of the 1990's. Last year's Senate Armed Services Report noted that the standards for weapons modules were being incorporated into the DDG 51 design and that the Navy planned to initiate design standards for ships other than destroyers. The Committee recommended an additional $13 million for the program. An additional $3.2 million was appropriated. Within the funding appropriated, the Navy will first insure the proper incorporation of the weapons standards in DDG 51, and then continue the generic standards for large and small size combatants.

OCEAN SURVEY SHIP—TAGS

Senator **Cohen**. Provide a detailed breakout of the funding requested in fiscal year 1984 for conversion of a C3 hull to an Ocean Survey Ship (TAGS).

Mr. **Sawyer**. A total of $34.5M is requested in fiscal year 1984 for advance procurement for the two fiscal year 1985 TAGS. The following items will be procured with this funding:

[Dollars in thousands]

Item	Quantity	Cost
Ship detail design	1	$5,200
Prepare schedule B package	1	5,800
Machinery plant automation	2	3,450
750 kW diesel generator w/controls	2	1,300
200 kW diesel generator w/controls	2	200
Heating, ventilation and air-condition equipment: miscellaneous fans, coils, heaters		4,350
Pumps, evaporators and pollution devices		1,300
Navy communication group	2	2,850
Mission sonar system	2	7,200
Mission metering/data system	2	2,850

LSD-41

Senator **Cohen**. I understand that the Department of Defense is likely to submit a multiyear procurement request for the LSD-41. What portion of the advance procurement funds requested in fiscal year 1984 are associated with this multi-year procurement?

Mr. **Sawyer**. The total advanced procurement for fiscal year 1984 is $182.1 million. The portion of the advanced procurement in fiscal year 1984 associated with the LSD-41 class multiyear procurement is $102.1 million.

Senator **Cohen**. What is the internal rate of return of the LSD-41 multiyear procurement program? How does this compare with other programs which have been approved for multiyear procurement?

Mr. **Sawyer**. The internal rate of return of the LSD-41 class multiyear procurement program is 213 percent. This compares very favorably to other programs.

Senator **Cohen**. What is the value of a multiyear contract for LSD-41 if the contract will allow cost growth attributed to inflation to be recouped from the government?

Mr. **Sawyer**. Although the contractor is permitted to recoup cost growth resulting from inflation (escalation) under the proposed LSD-41 class multiyear procurement contract there is a savings of $246.4 million using then-year dollars. The savings in constant fiscal year 1984 dollars is $176.98 million.

Senator **Cohen**. What are the cost savings? (By year in then-year and current dollars.)

Mr. **Sawyer**. The cost savings in then-year and current dollars is as follows:

Then-year dollar outlays

1984	+$0.53
1985	−.35
1986	+14.62
1987	−23.37
1988	−78.83
1989	−83.51
1990	−47.34
1991	−18.79
1992	−9.36
1993	0
Total million savings	246.40

Constant 1984 dollar outlays

1984	+0.52
1985	−.33
1986	+12.78
1987	−19.18
1988	−60.68
1989	−60.37
1990	−32.14
1991	−11.97
1992	−5.59
1993	0
Total million savings	176.98

Senator COHEN. What is the result if the multi-year program is not pursued? (Be specific)

Mr. SAWYER. Should the multi-year program not be approved, the Navy would contract for these ships on an annual basis. The projected end cost of the ships would increase as indicated below:

[In millions of dollars]

	Fiscal year—		
	1984	1985	1986
Annual (end cost)	374.7	822.4	809.3
Multiyear (end cost)	364.7	695.3	700.0
Increase for annual	10.0	127.1	109.3

MARITIME PREPOSITIONING SHIP/TAKX/SHIP CHARTERING

Senator COHEN. The Department of Defense's program to acquire 13 Maritime Prepositioning Ships through a charter program, rather than through procurement, has become controversial. Would you explain the key elements of this controversy and the Navy's position.

Is the Navy's Maritime Prepositioning Ship Charter program being challenged on this basis?

What are the tax ramifications of this issue? If you do not know, what prevents you from knowing?

Mr. Sawyer, in your testimony you said it should be the job of OMB to analyze the tax situation of chartering for the Government. Why do you recommend OMB? What specifically do you expect they would be able to do for the Committee and the Administration? Why should it not be done by the Treasury Department? (We will probably base our request on your response.)

Mr. SAWYER. The controversy that has recently arisen concerning the TAKX program centers on how the total Government cost should be calculated in comparing chartering versus purchase. On February 25, 1983, the staff of the Joint Committee on

Taxation (JCT) issued a report on the TAKX program which concluded that chartering is more expensive than a direct Government purchase of the ships. This conclusion is contrary to the conclusions reached by four independent studies previously performed by Coppers and Lybrand (Fall 1981), Argent Group Limited (Summer 1982), House Apropriations Surveys and Investigations Staff (Summer 1982), and Institute for Defense Analysis (Fall 1982).

The staff of the JCT utilized a different methodology and assumptions in performing its charter versus purchase analysis than did the other experts inside and outside the Government. The controversy is not really a tax matter per se but rather what methodology and assumptions should be utilized by the Executive agencies in making lease versus purchase analyses. The current OMB guidelines are not definitive nor complete and it is recognized that they need to be revised. Since the tax issues are only a few of the factors to be considered and the larger question impacts on Executive-wide management and procurement policies and procedures, OMB is the proper agency to address this problem.

FAST LOGISTIC SHIP (TAKR)

Senator COHEN. I understand that $246.5 million requested in fiscal year 1984 for four TAKR conversions would exercise an option of the fiscal year 1982 contract. When must this option be exercised?

Mr. SAWYER. The option must be exercised not later than February 28, 1984; however, the Navy would plan to exercise the conversion options in November 1983 to permit material ordering and prefabrication to facilitate timely completion of conversions. Ship will be maintained in readiness for contingency use until coverted ships are redelivered to the Navy.

Senator COHEN. What cost disadvantages would occur from a failure to fund the four TAKR conversions in fiscal year 1984?

Mr. SAWYER. A precise cost impact cannot be provided at this time. The Navy has fixed price, incentive options with shipyards. These options are not valid later than February 28, 1984. With fiscal year 1985 conversions, the contracts (with three shipyards) would have to be renegotiated. Realistically, the conversion prices would be expected to increase. Further, the Navy separately pays escalation indices. Thus, escalation from fiscal 1984 to fiscal 1985 would further increase the cost of conversions. The increase in costs for fiscal year 1984 conversions, vice fiscal year 1983, was about $25 million. The increase in cost for fiscal year 1985 conversions, vice fiscal year 1984, could be greater due to the necessity for renegotiation of conversion prices. Options for long lead material for the fiscal year 1984 conversions were exercised on January 21, 1983 to support fiscal year 1984 conversion schedules. Moving the conversion to fiscal year 1985 would result in additional cost for the long lead material due to either storage costs or the stretch-out of production schedules, with increased cost resulting from decreased efficiency and work flow.

STRATEGIC SEALIFT

Senator COHEN. The DOD Authorization Request includes $31.0 million for the procurement of a notional nine commercial ships for the Ready Reserve Force. What are the candidate vessels for this procurement and their respective ages?

Mr. SAWYER. We intend to issue requests for proposals for both tankers and dry cargo ships. Those that we hope to acquire in fiscal year 1984 will be those that are most militarily useful and most competitively priced. There are a number of ships in the industry that are no longer economical in daily commercial trade but still possess military utility. Many are or soon will be laid up and we anticipate many of these ships to be offered. The age of the ships will vary. Selection will be based upon careful inspection of the candidate ships.

Senator COHEN. Does the Maritime Administration support this planned procurement?

Mr. SAWYER. Yes, MARAD supports the procurement.

LSD-41

Senator COHEN. I understand that the Department of Defense is likely to submit a multiyear procurement request for the LSD-41. What portion of the advance procurement funds requested in fiscal year 1984 are associated with this multi-year procurement?

Mr. SAWYER. The total advanced procurement for fiscal year 1984 is $182.1 million. The portion of the advanced procurement in fiscal year 1984 associated with the LSD-41 class multiyear procurement is $102.1 million.

Senator COHEN. What is the internal rate of return of the LSD-41 multiyear procurement program? How does this compare with other programs which have been approved for multiyear procurement?

Mr. SAWYER. The internal rate of return of the LSD-41 class multiyear procurement program is 213 percent. This compares very favorably to other programs.

LHD-1

Senator COHEN. Given the potential for substantial downward pressure on the defense budget, would you please explain the importance of procuring the first ship of the LHD-1 class in fiscal year 1984?

Mr. SAWYER. The LHD-1 class is intended to provide a needed increase in the U.S. Navy's amphibious lift capability. Procurement in early fiscal year 1984 and an accelerated design and construction program made possible by a sole source procurement to the shipbuilder of the LHAs, a similar class of ships, will allow the LHD to arrive in the fleet as the aging LPH-2 class ships are retired. Delay of the LHD program will create an even greater shortfall in the amphibious lift capability during the early 1990's.

HOSPITAL SHIP (TAHX)

Senator COHEN. The first of two Hospital Ships was funded in fiscal year 1983. How soon does the Department of Defense expect to award a contract for this ship? What are the candidate vessels for conversion?

Mr. SAWYER. The design review and formal source selection is scheduled to commence shortly (6 April); upon completion the Congress will be so advised and assuming there are no objections it is the Navy's intention to let a contract for the first ship as soon as possible and not later than July 83. The candidate vessels for conversion offered by industry include San Clemente class tankers and LASH cargo ships.

Senator COHEN. Would there be any logic in delaying the funding of the second ship from fiscal year 1984 to fiscal year 1985?

Mr. SAWYER. No. The T-AHX program is currently structured as a two ship program. Contract award of the lead ship conversion is scheduled for June-July 1983, with exercise of a priced option for the second ship conversion planned for early fiscal year 1984. Delaying the funding for the second ship to fiscal year 1985 will create an atmosphere of program instability and severely disrupt the efficient conversion of the two ships by preventing workforce continuity in the successful offeror's shipyard, decreasing the material procurement savings permitted by an early option pick-up and increasing cost to the program by at least the additional one year of escalation required (rough order or magnitude—$20 million.) Slipping the second ship's funding by one year will defer the delivery date of the total hospital ship capability by at least one year.

LANDING CRAFT, AIR CUSHION (LCAC)

Senator COHEN. The subcommittee has been a strong supporter of the LCAC program. Have any problems developed in the initial production of LCAC's?

Mr. SAWYER. No, there have been no initial production problems that would impact on the program. Fabrication of the first craft started two months early in August 1982, and no production problems are expected in the future.

Senator COHEN. Why has the Navy not requested a faster ramp up in production quantities?

Mr. SAWYER. The Navy Department has considered the feasibility of an accelerated Landing Craft, Air cushion (LCAC) construction program and found that a procurement schedule of 12 LCAC per year starting in 1985 is compatible with the amphibious shipbuilding program, needed to carry LCAC's.

COMPARISON OF SELECTED USN/RN PRACTICES

Senator COHEN. How do U.S. ships compare with U.K. ships in terms of stability, design margins, and damage control?

Mr. SAWYER. Practices which the U.S. Navy and Royal Navy strive to meet in combatant ships in the areas of stability, design margins affecting ship survivability, and damage control are generally similar. Where differences exist, USN practice is almost always more demanding.

Both navies provide watertight subdivision in large warships sufficient to preclude sinking of the ship due to flooding of at least three adjacent major compartments. In the USN, this flooding must also be consistent with a minimum length of damage equal to 15 percent of ship length on the waterline. The USN is also more conservative in defining the required extent of watertight boundaries in accounting for the effects of ship roll and wave action when damaged.

In the process of designing and constructing naval ships both the USN and RN use margins to compensate for the inexact nature of engineering estimates and to allow growth flexibility over the life of the ship. Unexpended margins for displacement growth, increase in the ship's center of gravity, and required capacity of certain major subsystems, such as electric plant or firemain, can have a beneficial effect on ship survivability. For surface combatant ships the USN seeks to achieve in a new ship a capability to increase, over the life of the ship, the full load displacement by 10 percent and raise the center of gravity by one foot. RN practice is less definitive but similar. In both navies it is common for relatively new ships to fall far short of these goals due to cost and ship size constraints imposed during acquisition, unexpected growth during design and construction, or major modifications early in a ship's service life. USN and RN practice in selecting the capacity of a ship's electric plant would be expected to yield similar results. USN practice in sizing firemain systems is more conservative than that of the RN and would be expected to result in a system of significantly greater capacity.

Damage control features and procedures in the two navies are similar in most major respects but, based upon a comparison of a U.S. *Perry* class frigate and a U.K. Type 42 destroyer, some significant differences exist in certain specific areas. The USN is more strict regarding use of non-essential combustibles such as wood sheathing and stuffed furniture. More extensive fire zone boundaries to isolate the effects of a fire are fitted by the USN. USN practice provides better access throughout the ship. On the other hand, the RN provides special protective clothing for fire fighters while the USN generally does not.

Damage control lessons learned from the Falklands Campaign are being evaluated by both the USN and RN and changes are anticipated.

FALKLANDS CAMPAIGN

Senator COHEN. How many total AAW missiles did the UK have aboard their surface combatants (by type) in the Falklands?

Mr. SAWYER. During the Falklands conflict, the United Kingdom (Royal Navy) employed the following surface combatants.

[DELETED]

Quantity/type	Class	AAW system	Deleted
1 CVHG	Invincible	1 Sea Dart	
1 CVH	Hermes	2 Sea Cat	
5 DDG	Sheffield (type 42)	1 Sea Dart	
1 DDG	Bristol (type 82)	1 Sea Dart	
2 DDG	Country class	1 Sea Slug	
*		1 Sea Cat	
2 FF	Broad Sword (type 22)	2 Sea Wolf	
7 FF	Amazon (type 21)	1 Sea Cat	
3 FF	Leander (Exocet)	3 Sea Cat	
1 FF	Leander (Sea Wolf)	1 Sea Wolf	
2 FF	Rothesay	1 Sea Cat	
2 LPD	Fearless	4 Sea Cat	

* Estimate—Exact number not known.

AAW MISSILES

Senator COHEN. How many AAW missiles do U.S. ships carry (by ship type)?

Mr. SAWYER. Ships with the capability of multiple missions are loaded by the Fleet Commander according to the current situation. For planning purposes, the CNO has a notional AAW Loadout for appropriate ships. These are as follows:

Standard missiles		Rim 7 (BPDSMS/NSSMS)	
Ship class	Loadout	Ship class	Loadout
FFG 1	15	FF 1052	8
FFG 7	35	CV/CVN	32
DDG 2/15	35	LCC	32
DDG 37	38	LHA	32
DDG 993	50	LPH	32
CG 16/CGN 25	76	AOR/AOE	16
CG 26/CGN 35	48	DD 963	24
CGN 9	116		
CGN 36	78		
CGN 38	50		
CG 47	68		

CG 47 CRUISERS

Senator **Cohen**. Would you explain the test and evaluation of the Aegis Combat System which has occurred?

Admiral **Walters**. Aegis development has been underway since before 1969. Through those years, every Administration and all levels of Congress have been kept continually well informed about the results and plans for Aegis testing and operations. All have repeatedly endorsed these programs.

Those extensive tests and operational exercises are reflected in these statistics:

Eight years at sea in test ship U.S.S. *Norton Sound* (AVM 1).

Seven years ashore.

33,000 hours of operations ashore.

59,000 hours of operations at sea.

Sixty-five engagements at sea [deleted].

Seventy-four other test firings at sea.

Targets engaged in these flight profiles:

High altitude, subsonic, inbound.

Low altitude, subsonic, inbound.

High altitude, supersonic, inbound.

Low altitude, supersonic, inbound.

Low altitude, supersonic, crossing.

High altitude, supersonic, diving.

Low altitude, supersonic, pop-up.

High altitude, supersonic, diving maneuvering.

There have been a number of multiple engagements.

500–1000 targets are tracked each day.

785 hours of manned Navy aircraft flown as targets at various altitudes and speeds representing threats.

Manned Navy aircraft have carried powerful, specially built electronic jammers to challenge the Aegis system.

150 hours ashore.

390 hours at sea.

Fourteen major operational exercises conducted (ashore and at sea).

Postulated battle conditions (jamming, multiple raids, various altitudes and speeds).

Over 2000 tactical scenarios.

All operational exercises and development tests conducted both ashore and at sea by Naval officers and sailors.

Perhaps most significantly over this time, U.S.S. *Norton Sound* has participated in three fleet exercises under battle group conditions. In war simulated exercises during those maneuvers, the Aegis ship consistently demonstrated ability to engage targets that the other ships could not.

Senator **Cohen**. The highlight of Aegis operations to date occurred late last year when U.S.S. *Ticonderoga* (CG 47) splashed [deleted] targets before she was commissioned. This feat has never been done by any other ship so early in her life.

Of the live firings conducted, which ones have placed the most stress on the system?

Admiral **Walters**. Successful intercepts of [deleted]. Targets [deleted].

Successful intercept [deleted].

Successful crossing intercepts [deleted]. One of these tests was conducted in very inclement weather.

Succesful tests against [deleted] incoming targets [deleted] conducted from a trainable launcher and [deleted] from a vertical launcher.

A number of tests against BQM's [deleted].

Senator Cohen. What are the fastest, lowest-flying targets you have engaged?

Admiral Walters. Fourteen Aegis at-sea tests, against low altitude targets [deleted] have been conducted in U.S.S. *Norton Sound* in the Pacific. These included significant intercepts [deleted].

Senator Cohen. When are you getting improved targets to test the Aegis system?

Admiral Walters. In 1984 a Vandal target [deleted] will be available.

Senator Cohen. What is the greatest number of targets which have been simultaneously tracked?

Admiral Walters. [Deleted.]

Senator Cohen. Shot down?

Admiral Walters. [Deleted] on several occasions.

CG 47

Senator Cohen. Last year, selected items of sonar and radar equipment were removed from the fiscal year 1983 CG 47 cruisers during the appropriations process.

What specific pieces of equipment were eliminated?

Admiral Walters. The SPS-49 radar and Lamps III shipboard electronics.

Senator Cohen. What is the origin of the dispute over the radar?

Admiral Walters. There is no dispute. GAO has said the SPS-49 radar is redundant and unnecessary. They never supported those opinions with technical detail.

Senator Cohen. What is the reason for the dispute involving the sonar?

Admiral Walters. There is no dispute here either. In 1982, the HAC Surveys and Investigations Staff said the SQR-19 Towed Array Sonar should be removed from CG 47's to solve what they perceived were weight and KG problems in those ships. They indicated ". . . TACTAS may not be necessary. . . ." There are no weight and KG problems associated with CG 47's that require that kind of action for solution. Moreover, in its recently completed Opeval in U.S.S. *Moosbrugger,* Tactas superbly demonstrated its capability. When coupled with Lamps III, Tactas has been shown to [deleted] the ASW capability of a Battle Group or Surface Action Group.

Senator Cohen. What cost savings resulted?

Admiral Walters. The budget was reduced $25M. Eventual cost savings are questionable.

Senator Cohen. What is the operational significance of this change?

Admiral Walters. Loss of SPS-49 capabilities:

Removes one of the first options designed into CG 47 to prevent her from being saturated during air raids.

Eliminates [deleted] CG 47.

Loss of Lamps III shipboard electronics:

Removes the capability for two-way relay of sophisticated target engagement data between the ship and the helicopter.

Reduces coordination between ship and helicopter to voice control.

Impacts vectoring, targeting, weapons delivery.

Reduces overall force coordination and ability to deal with simultaneous air, surface and underwater attacks.

CG 47 is also a "mother ship" for carrying Seahawks, which would temporarily operate from DDG 51's.

Senator Cohen. How much would it cost to restore the equipment?

Admiral Walters. $25M if restored during construction. If the equipment is backfit, it could cost twice as much depending on the year of the backfit.

Program	Contract type	Sharing arrangement (target cost=TC)
Nuclear carriers:		
CVN 71	FPI	70/30 below TC, 85/15 above TC.
CVN 72	FPI	75/25.
CVN 73	FPI	75/25.
SSN 688:		
1st Flite	FPI	70/30.

Program	Contract type	Sharing arrangement (target cost=TC)
2d Flite	FPI	70/30 below TC. 85/15 from TC to $459,690,000. 70/30 above $459,690,000.
3d Flite	FPI	70/30 below TC. 95/5 from TC to $397,975,404. 85/15 above $397,975,404.
4th Flite	FPI	70/30 below TC, 80/20 above TC.
5th Flite	FPI	70/30 below TC, 80/20 above TC.
6th Flite	FPI	50/50.
7th Flite	FPI	50/50.
8th Flite	FPI	50/50.
Trident:		
Group I	FPI	70/30 below TC. 95/5 from TC to $1,023,862,240. 85/15 above $1,023,862,240.
Group II	FPI	65/35 below TC, 85/15 above TC.
Group III	FPI	75/25.
Group IV	FPI	50/50 under TC. 90/10 from TC to $932,980,556. 50/50 above $932,980,556.
FFG:		
1st Flite	FPI	70/30.
2d Flite	FPI	70/30.
3d Flite	FPI	70/30.
4th Flite	FPI	65/35.
AD 44	FPI	75/25.
AO-186	FPI	75/25.
T-AO	FPI	50/50.
T-AKR	FPI	50/50.
TAGOS	FFP	
BB61	CPAF	
LCAC	CPAF	
T-ARC	CPFF	
CG-47, CG48-53	CPAF	
LSD:		
LSD 41	CPAF	
LSD 42	CPAF	
LSD 43	FPI	50/50.

QUESTIONS SUBMITTED BY SENATOR SAM NUNN

NAVY WEAPONS INVENTORIES

Senator NUNN. Navy Weapons Inventories: Admiral Walters, I continue to hear reports that the Navy still has to cross-deck ammunition and other wartime stocks with ships returning/leaving on deployments.

Senator Cohen asked about the situation last year and I would like for you to provide both of us with an update.

Please provide a historical record of the desired inventory levels for each of the weapons listed below since 1970 to the current year 1983:

5"/54 Full Charge; Sonobuoys (by type); Harpoon (type); Tomahawk; SM-1 (by Type); SM-2 (by type); Sea Sparrow; Mines (by type); Torpedoes (by type); ASROC; SUBROC.

Admiral WALTERS. The attached sheet provides a historical record of inventory objectives.

[Chart deleted.]

Senator NUNN. For each of the following weapons provide the current inventories on hand and also what the inventories will be if the 1984 budget is approved and what the inventories will be if the five year plan is approved.

5"/54 Full Charge; Sonobouys; Harpoon; Tomahawk; Standard Missiles; Seasparrow; Mines; Torpedocs; ASROC: SUBROC.

Admiral WALTERS. The attached sheet provides the requested information.

[Chart deleted.]

TRANSFER OF AMMUNITION

Senator **Nunn**. What is the current situation in terms of having to transfer ammunition and other items from returning ships to deploying ships?

Admiral **Walters**. Mines are not transferred from returning ships to deploying ships (cross decking). [Deleted.] Those mines carried by our battle group ships provide a quick response mining capability. [Deleted.]

STANDARD missile inventories are such that in some instances [deleted]. Prior to this transfer, a missile inspection takes place. The returning ship "off-loads" its missiles at the Naval Weapons Station. The missile is presented for required periodic maintenance and testing if it is near or past the average maintenance cycle of 24 months. Otherwise, a visual test will be performed and missile will be issued to the next deploying ship. [Deleted.] If the fiscal year 1984 budget and 5-year plan is approved, this situation will be rectified [deleted].

Currently there is limited transfer [deleted]. This situation will be rectified if the current budget is approved.

[Chart deleted.]

Senator **Nunn**. In terms of ASW sonobouys, could you provide the inventory objectives, the numbers that were used in 1980, 1981, 1982 and planned for 1983, and 1984 and the numbers that are being procured and will be placed in inventory during 1983 and 1984?

Admiral **Walters**. The enclosed table provides the requested information.

[Table deleted.]

NAVY WEAPONS INVENTORIES

Senator **Nunn**. What shortages, if any, exist in some of the other categories of aircraft delivered munitions, and what are the inventory objectives and procurement plans?

Admiral **Walters**. [Deleted.] Shown are air-to-air missile shortages and an ordnance readiness summary of assets, objectives and procurement for numerous air munitions.

MAJOR ORDNANCE READINESS SUMMARY (QUANTITIES THOUSANDS)

	Planning objective end of fiscal year 1984 FDP	Net assets end of		Percent readiness to planning objectives end of		Usage during fiscal year 1984 FDP	Procurement plan		
		Fiscal year 1983 FDP	Fiscal year 1984 FDP	Fiscal year 1983 FDP	Fiscal year 1984 FDP		Fiscal year 1982	Fiscal year 1983	Fiscal year 1984
Air launched ordnance:									
MK82 Bomb							8.4		
MK83 Bomb (TP)							10.0		
MK84 Bomb (TP)									
LGB MK82 (ea)							500.0	1,060.0	350.0
LGB MK83 (ea)							1,528.0		
LGB MK84 (ea)							100.0		
Walleye I ERDL (ea)							444.0	200.0	75.0
Walleye II ERDL (ea)									
Zuni Motor							10.5	4.7	7.5
2.75 Motor(s)							.4	10.0	38.8
Paraflare				[Deleted]			70.1	4.7	
Marine marker MK25							43.1	57.2	
Marine marker MK58							33.8	23.3	17.9
RR-129 Chaff							336.1	160.0	1,137.4
RR-171 Chaff (sets)							3,432.0	1,298.0	5,994.0
Airboc									1.6
MJU-2B Flare (ea)							1,581.0		
MK46 Flare								22.0	171.4
Quantico-03 Crtg							695.3	369.9	1,160.2
MK131 Crtg								30.7	178.4
H Band jammers							8.4	12.0	25.0
Jato MK25 (ea)							1,990.0	1,069.0	1,306.0

MAJOR ORDNANCE READINESS SUMMARY (QUANTITIES THOUSANDS)—Continued

	Planning objective end of fiscal year 1984 FDP	Net assets end of		Percent readiness to planning objectives end of		Usage during fiscal year 1984 FDP	Procurement plan		
		Fiscal year 1983 FDP	Fiscal year 1984 FDP	Fiscal year 1983 FDP	Fiscal year 1984 FDP		Fiscal year 1982	Fiscal year 1983	Fiscal year 1984
Gator (ea									405.0
Bigeye (ea)									525.0

(C) AIR-TO-AIR MISSILE SHORTAGES

MSL type	Inventory objective (I.O.)	Inventory as of 31 Dec. 1983	Percent of I.O.	Projected inventory end fiscal year 1988 FDP	Percent of I.O.
Sidewinder					
Sparrow		[Deleted.]			
Phoenix					

(U) AIR-TO-AIR MISSILE PROCUREMENT FISCAL YEAR 1984 PRESIDENT'S BUDGET

MSL type	Fiscal year—				
	1984	1985	1986	1987	1988
Sidewinder	350	1,000	1,220	1,168	1,168
Sparrow	374	770	838	1,182	490
Phoenix	290	464	497	507	537

CARRIER BATTLE GROUPS

Senator NUNN. Admiral, the New York Times reports this morning on the new Defense Guidance and includes a chart similar to ones that OSD has testified about in the last two years. The chart refers to those forces planned for by DOD in the five-year budget vice those forces that the JCS has recommended to meet the strategy as they see it.

I recall testimony last year by Admiral Trost that it would take a higher number of Carrier Battle Groups to meet the strategy than were in the five-year plan.

Do you agree with the number in the Times story this morning that it would require 24 Carrier Battle Groups instead of the 15 planned in the DOD program by 1989 for what I assume you would call a "reasonable assurance" force?

Admiral WALTERS. In order to answer your question I must first point out that the "reasonable assurance" force which you referenced and was depicted in the New York Times article was a logistically, manpower and fiscally unconstrained force sized to meet a worst case, near-simultaneously begun, worldwide conflict scenario set in the 1990s timeframe. [Deleted.]

NAVY STRATEGY/FORCE MISMATCH

Senator NUNN. Did not Secretary Lehman already testify this year that the Carrier that was originally placed in the Navy 5 year shipbuilding plan for fiscal year 1988 was not now required? Is there, then, any realistic way the Navy will have more than 15 Carrier Battle Groups by 1989?

Admiral WALTERS. Secretary Lehman has testified that the fiscal year 1984–88 shipbuilding plan includes a carrier in fiscal year 1988. This ship was included in the plan in the event the second carrier was not appropriated in fiscal year 1983. Funding of two Nimitz class nuclear powered aircraft carriers in fiscal year 1983 will permit Navy to achieve its goal of 15 CV/CVNs by the end of calender year 1989. Thus the fiscal year 1988 CVN will not be included in the fiscal year 1985 to 89 shipbuilding plan.

SHIPBUILDING PROGRAM

Senator **Nunn**. Admiral, how many new ships are in this year's five year plan and how many were in the five year plan last year? Do you now plan to build fewer ships than planned last year?

Admiral **Walters**. The fiscal year 1984 to 1988 shipbuilding plan contains 124 new construction ships and 21 conversions or acquisitions. By way of comparison, the fiscal year 1983 to 1987 shipbuilding plan contained 133 new construction ships and 16 conversions. There are nine fewer new construction ships in this year's plan.

Senator **Nunn**. How many ships were delivered in 1981, 1982 and how many wi be delivered in 1983?

Admiral **Walters**. In fiscal year 1981 and 1982, 18 and 25 ships were delivered respectively. Our current projection is that we will deliver 22 ships in fiscal year 1983.

Senator **Nunn**. How many of the new ships that were delivered in 1981, 1982 and will be delivered in 1983 are from previous administration's shipbuilding budgets?

Admiral **Walters**. Since 20 January 1981, 28 ships appropriated during the previous administration have been delivered to the Navy. In addition, 31 ships, appropriated under the previous administration, are still under construction. For the purpose of this reply, ships contained in the fiscal year 1977–80 program are considered to be from the previous adminstration.

DDG 51

Senator **Nunn**. Admiral Walters, in your statement you mention the DDG 51 and provide a detailed description of its design taking over two pages. Yet I understand that Secretary Lehman has just notified the Committees that the award of a design contract has just been cancelled. What is the exact situation and why should the Congress approve long-lead procurement funds for this new class of ships before the Navy knows exactly what the design is and what the cost parameters are?

Admiral **Walters**. From the beginning, the Navy planned to manage the contract design for DDG 51. Originally, however, the prospective lead shipbuilder aided by two alternate shipbuilders was to be the leading design agent. The Navy's recent decision basically moved the lead design agent function in-house and postponed the selection of the lead shipbuilder. The shipbuilders will still participate but at a lower level or responsibility and on the same schedule. There has been no chance in schedule, just a chance in the division of labor.

Preliminary design is now complete. While all the contract and detail design work is not finished and won't be until after construction begins, the size, characteristics, performance and cost of the ship are know and bounded by the design. The schedules for shipbuilding and equipment installation are also understood well enough to identify those systems requiring advance funding to meet the ship schedule.

Senator **Nunn**. Secretary Sawyer, I would be interested in your comments on this situation.

Secretary **Sawyer**. I agree with the decision. This revised approach will permit us to obtain a better balance between capability and affordability while maintaining our schedule for lead ship contract award in fiscal year 1988.

Senator **Nunn**. What are the plans for the SQR–19 Towed Array in terms of the DDG 51?

Admiral **Walters**. SQR–19 is planned for the first DDG 51.

Senator **Nunn**. What ASW capability will the DDG 51 have?

Admiral **Walters**. SQS–53C hull mounted and SQR–19 Towed Array Sonars. Vertically Launched ASW Rockets (ASROC), and over-the-side torpedoes. MK–116 MOD 7 Underwater Fire Control System. Lamps III flight deck with design budget for shipboard LAMPS MK–III electronics. The helicopter can carry torpedoes, magnetic anomaly detection gear and sonobuoys.

Senator **Nunn**. Is the Navy planning to compete major subsystems of the DDG 51 such as the radar and if not why not?

Admiral **Walters**. The Navy already has completed many of the systems in DDG 51. More competition is now underway and will continue when it is economically, technologically and operationally wise to do so. For example, the computers are being completed right now. Basic construction materials such as steel, piping, cabling, as well as equipment and components will be competed.

Senator **Nunn**. Would it be advantageous to the Navy to have two sources for the radar for both the DDG 51 and the AEGIS?

Admiral **Walters**. No. Introduction of a second source for the AEGIS radar is a practical impossibility until after 1987. Even then it will be extraordinarily expensive and make only a marginal increase in the industrial base. For the radar, Navy has been pursuing an acquisition strategy which stresses competition and second-sourcing at the major component level.

LEASING PLAN FOR THE MARITIME PREPOSITIONING SHIPS

Senator **Nunn**. I know that there have been detailed hearings in other Committees on the leasing plan for the Maritime prepositioning ships. Could you provide this Committee with the requirement for these ships and why the leasing plan is the best route to meet this requirement?

Secretary **Sawyer**. The 13 TAKX ships are required primarily to pre-position the equipment, munitions, supplies, and fuel in support of the rapid deployment of three Marine Amphibious Brigades.

In addition to the economic advantages of chartering versus purchasing, as set forth in the Argent Study, there are a number of other substantial benefits to chartering which are summarized as follows:

(1) Fulfilling the Congressional intent expressed in the Merchant Marine Act, 1936, of utilizing U.S. Merchant Marine ships and crews to meet defense transportation needs whenever practicable;

(2) Creating some 750 new U.S. seafaring jobs;

(3) Shifting the risks of construction cost overruns and delivery of defective ships to private sector participants;

(4) Matching expenditures associated with the utilization of an asset with the receipt of benefits from that asset;

(5) Utilizing commercial specifications and standards and private sector supervision of ships with an attendant cost savings of approximately $450 million;

(6) Creating the incentive to build efficient ships by placing the risk of excessive operating costs on the private operators who will supervise construction;

(7) Securing significant union concessions in both the construction and operating phases of the program through negotiation of a single integrated transportation package;

(8) Accelerating the program completion by 18 months, thereby allowing early phase-out of some of the outmoded ships currently utilized, resulting in a present value savings of approximately $225 million;

(9) The acceleration of construction to fiscal year 1983 not only created or preserved over 12,000 jobs in the U.S. shipbuilding industry but also averted the closing of at least three shipyards which are vital to the Nation's industrial base.

COST GROWTH AND ESCALATION

Senator **Nunn**. The Navy fiscal year 1984 budget request includes $1,050 million for Cost Growth and Escalation ($674.7 million for Cost Growth and $375.6 million for Escalation). Could you provide some explanation of just what these funds will be used for, how the Cost Growth occurred, and what years you expect to expend these funds?

Secretary **Sawyer**. With respect to the fiscal year 1984 Cost Growth request, $107.3 million is required for the fiscal year 1982 CG 47 program. Funding is necessary to meet the start-up costs associated with establishing a second shipyard to share CG 47 production. In the fiscal year 1982 Supplemental request, the Navy notified the Congress that a minimum of $80 million would be required to meet these costs. The $80 million request was not approved by Congress on the grounds that the requirement could be addressed in subsequent year budget requests. Since that time the second source requirement has been thoroughly reviewed, and the Navy's best estimate of the additional funds necessary to fully fund the CG 47 program has been determined to be $107.3 million, excluding escalation. None of the requested funds will be required in fiscal year 1984.

Also included in the fiscal year 1984 Cost Growth request is $25 million, most of which is required to fully fund the construction of the fiscal year 1983 SSN program. The fiscal year 1983 DoD Appropriation Act reduced program reserves ($13.2 million from Project Managers Growth and $10 million from Future Characteristics Changes) which had already been reprogramed and obligated for higher than budgeted basic construction awards and Arctic improvements. As the program is currently budgeted, all program reserves have been eliminated and required future government furnished equipment purchases will not be possible unless additional funding is provided. None of the requested funds will be required in fiscal year 1984.

The fiscal year 1984 Cost Growth line item also includes $542.4 million for the Trident program. This cost increase consists of $436.0 million for the fiscal year 1981 Trident and $106.4 million for the fiscal year 1978 and prior Trident submarines. With regard to the $436 million Trident Cost Growth, the Senate Appropriations Committee markup of the fiscal year 1983 appropriations bill provided approval of a fiscal year 1983 D-5 configured ship but denied the Cost Growth funds required for installation of the D-5 capability on the fiscal year 1981 ship (SSBN 734). The Navy was directed to use unobligated balances and program reserves to initiate D-5 installation and design on the SSBN 734 pending development of firm cost estimates to be included as a fiscal year 1984 Cost Growth requirement. On a cash flow basis, $275 million of the request will be required in fiscal year 1984.

An addition $106.4 million represents a portion of Cost Growth associated with the Trident program which will fully fund the first 7 ships (fiscal year 1978 and prior). These funds are required as a result of revised ship delivery dates announced by Electric Boat in March 1981. The $106.4 million requested will be used by the Navy to fund shipbuidling cost increases associated with time-related construction support services such as design and vendor engineering services. The March 1981 delays stretched out the Test and Certification period for the various ship systems installed aboard these *Ohio* class submarines. During this extended period the shipbuilder and his associated vendors are required to operate and maintain these systems in lieu of the Navy. These funds were requested in the fiscal year 1982 Supplemental but denied by Congress on the grounds that the requirement could be addressed in subsequent year budget requests. On a cash flow basis, $70.0 million of the request will be required in fiscal year 1984.

The Escalation request of $375.6 million is required to fully fund fiscal year 1983 and prior year programs to the January 1983 OSD/OMB projected inflation indices. Shortly before the submission of the fiscal year 1983 budget, the Department of Defense issued new inflation indices. The very short turnaround period provided to assess the impact of these new higher indices allowed only a brief analysis, on a total appropriation level, of the additional escalation required. When later calculations based on analysis of the impact on each individual ship type were completed, it became clear that the amount of escalation provided in the fiscal year 1983 budget would not be sufficient to meet total escalation requirements. The new DoD indices incorporated in the fiscal year 1984 Budget reflect the lower actual inflation experienced in fiscal year 1982 and also assumed lower outyear inflation rates than the indices used for the fiscal year 1983 Budget. The fiscal year 1984 Escalation request results, despite the new lower rates, largely because the entire escalation requirement was not provided in fiscal year 1983. Adjustments have also been made to reflect the impact of actual contractor expenditures as opposed to previous estimates of the time expenditures would occur. None of the requested funds will be required in fiscal year 1984.

Senator NUNN. Will all of the Cost Growth money be expended during fiscal year 1984?

Secretary SAWYER. None of the requested Cost Growth funds for the CG 47 and SSN programs will be required during fiscal year 1984. However, on a cash flow basis, it is currently estimated that in fiscal year 1984 $275 million would be required for the 1981 Trident D-5 installation effort and approximately $70 million would be required for the fiscal year 1978 and prior Trident hulls for cost increases associated with time related construction support services.

Senator NUNN. Will all of the money for Escalation be expended during fiscal year 1984?

Secretary SAWYER. None of the Escalation funds requested will be required during fiscal year 1984.

Senator NUNN. Is this Cost Growth and Escalation for events actually occurred or is this just Navy estimates of what is needed? What was the amount you requested in fiscal year 1982 and fiscal year 1983 budgets for the Cost Growth and Escalation lines?

Secretary SAWYER. With respect to the Cost Growth lines, the funding requests are largely in response to events or policy decisions which have already occurred, including establishing a second shipyard for the CG 47 program, having to meet higher than budgeted basic construction awards for the SSN program with diminished program reserves due to reductions by the fiscal year 1983 DoD Appropriations Act, incorporating D-5 capability in the fiscal year 1981 Trident hull, and providing funding required to fully cover the March 1981 contract modifications for the first seven Trident submarines. The Escalation request is a projected outyear inflation requirement based on the January 1983 OMB/OSD inflation indices.

The fiscal year 1982 Congressional Budget request (as amended by the Reagan Administration) for Cost Growth and Escalation was $224.0 million for each line. The fiscal year 1982 Appropriation Act reduced the Cost Growth request by $40.0 million and approved the Escalation line as requested. For fiscal year 1983, requested Cost Growth and Escalation amounts were $314.2 million and $209.2 million, respectively. The fiscal year 1983 Appropriation Act provided $249.7 million for Cost Growth and approved the Escalation line as requested.

Senator **Nunn**. What did you estimate in fiscal year 1983 that these amounts would be in fiscal year 1984?

Secretary **Sawyer**. With the exception of the $80 million requirement for CG 47 second sourcing funding and the fiscal year 1978 and prior Trident shortfall of $106.4 million, none of the fiscal year 1984 Cost Growth budget request was estimated at the time of the fiscal year 1983 budget submission. This is in accordance with the end cost system of budgeting and established DoD full funding policy which require that all shipbuilding programs be fully funded to the amount estimated at the time of each budget submission. The exceptions noted above were requested in the fiscal year 1982 Supplemental, submitted concurrently with the fiscal year 1983 budget submission. With respect to Escalation, the request was considered sufficient at the time of the submission to fully fund the January 1982 OSD/OMB indices.

Senator **Nunn**. How much of what you received last year will be expended in fiscal year 1983?

Secretary **Sawyer**. Of the $249.7 million received last year for Cost Growth, $35 million will be required on a cash flow basis in fiscal year 1983. None of the fiscal year 1983 Escalation funds will be required in fiscal year 1983.

Senator **Nunn**. What then is the total for the fiscal year 1982, 1983, and 1984 budgets?

Secretary **Sawyer**. Currently budgeted or requested amounts for Cost Growth and Escalation are as follows:

	Fiscal year		
	1982	1983	1984
Cost growth	[1] 233.1	249.7	674.7
Escalation	224.0	209.2	375.6

[1] Reflects reprograming action for additional $14.1 million approved for the fiscal year 1981 SLEP in June 1982. Also includes proposed reprograming action of $35.0 million ($23.0 million for fiscal year 1979 TARC and $12.0 million for fiscal year 1981 Trident) submitted with the fiscal year 1984 DoD budget request.

TRIDENT COST GROWTH

Senator **Nunn**. It appears that $106M is for cost growth in the Trident program not counting the $436 million to configure the lead D-5 ship and $67 million for escalation in the Trident program. What are the reasons for this?

Admiral **Walters**. The $106M being requested for cost growth are required as a result of revised ship delivery dates on Trident I (C-4) ships (SSBN 727 through 732) as announced by Electric Boat in March 1981. These additional funds are required to cover extension of time-related construction support efforts such as design and engineering services, and involve several vendors and ship systems. The March 1981 delivery dates actually stretch out the Test and Certification period for each ship. During this extended period the shipbuilder and supporting contractors will maintain and operate various ship systems instead of the Navy and this increases the cost of the ships. This $106M was originally requested in the fiscal year 1982 supplemental budget request but was denied by Congress. The $67 million being requested for escalation reflects the current inflation rates as applied to the extended delivery dates announced in March 1981.

ESCALATION

Senator **Nunn**. Mr. Secretary, we have seen in all parts of the budget, defense and non defense, reduction in program costs due to lower than projected inflation, yet in this years' budget you are requesting over $375 million for escalation on prior year programs. Would you explain why these programs are not realizing the benefits of lower actual inflation than that which was projected when the ships were funded by the Congress.

Secretary **Sawyer**. The Escalation request in the fiscal year 1984 Budget of $375.6 million is required to fully fund fiscal year 1983 and prior year ships. Shortly before the submission of the fiscal year 1983 Budget, the Department of Defense issued new inflation indices. The very short turnaround period provided to assess the impact of these new higher indices allowed only a brief analysis on a total appropriation level of additional escalation required. When later calculations based on analysis of the impact in each individual ship type were completed, it became clear that the amount of escalation provided in the fiscal year 1983 Budget would not be sufficient to meet total escalation requirements. The new DOD indices incorporated in the fiscal year 1984 Budget reflect the lower actual inflation experienced in fiscal year 1982 and also assume lower out-year inflation rates than the indices used for the fiscal year 1983 Budget. The fiscal year 1984 Escalation request results, despite the new lower rates, largely because the entire escalation requirement was not provided in fiscal year 1983. Adjustments have also been made to reflect the impact of actual contractor expenditures as opposed to previous estimates of the time expenditures would occur. The fiscal year 1984 Escalation request reflects the funding required to fully fund the latest approved OSD/OMB indices for all fiscal year 1983 and prior year programs.

Senator **Nunn**. Would you provide for the record a breakout by individual ship of the $375 million escalation you are requesting this year. Would you also provide for each of these ships the outlay deflator that was estimated for each year of the programed procurement, the actual SCN outlay deflator experienced for the years through 1983 and the current projected SCN deflators through the rest of its projected funding period.

Secretary **Sawyer**. The fiscal year 1984 Escalation request by ship program is as follows:

Fiscal year 1984 escalation request

	Millions
Trident:	
Fiscal year 1977	$10.0
Fiscal year 1978	52.4
Fiscal year 1983	4.6
Trident total	67.0
CVN:	
Fiscal year 1980	5.4
Fiscal year 1983	82.8
CVN total	88.2
SSN:	
Fiscal year 1977	5.2
Fiscal year 1978	.7
Fiscal year 1980	15.9
Fiscal year 1982	15.9
Fiscal year 1983	1.1
SSN total	38.8
CG-47:	
Fiscal year 1982	62.4
Fiscal year 1983	76.3
CG-47 total	138.7
LSD: Fiscal year 1983	1.0
FFG:	
Fiscal year 1979	28.9
Fiscal year 1983	5.7
FFG total	34.6
MCM: Fiscal year 1983	7.3
Total	375.6

The indices used in calculating the Escalation request are provided in the attached table.

OSD(C) APPROVED FORECASTS—BLS SHIPBUILDING INDEXES (50/50) FOR CONTRACT ESCALATION

FORECAST APPROVAL DATE	BUDGET	71	72	73	74	75	76	7T	77	78	79	80	81	82	83	84	85	86	87
12/71	FY 73		3.7	2.4	2.4	3.0	4.0	–	4.0	4.0									
12/72	FY 74			4.5	4.3	4.3	4.3	–	4.3	4.3									
8/73	FY 75				4.3	4.3	4.3	–	4.3	4.3	4.3								
8/74	FY 76					11.5	11.5	–	11.0	7.5	7.5								
8/75	FY 77						11.5	2.8	10.2	8.4	6.6	6.4							
8/76	FY 78							2.8	10.2	8.4	6.6	6.4	6.4						
7/77	FY 79								6.7	8.4	6.6	6.4	6.4	6.4					
7/78	FY 80									10.0	6.6	8.0	8.0	6.5	6.5				
8/79	FY 81										9.8	8.2	7.6	7.3	8.2	6.9			
4/80	FY 82											10.8	8.9	8.8	7.9	8.2	7.1		
2/81	FY 82											10.1	7.9	8.7	7.3	6.2	5.5	5.0	
1/82	FY 83													9.6	8.5	7.3	7.6	6.5	
1/83	FY 84														6.5	6.9	6.4	6.1	5.8
	ACTUALS	4.1	4.8	5.6	15.0	13.9	6.5	1.6	6.5	9.1	10.0	9.9	10.1	4.4					

COST GROWTH

Senator NUNN. Mr. Secretary, would you provide for the record a breakout by individual ship of the $675 million cost growth you are requesting this year and the reason for each of those cost growths.

Secretary SAWYER. With respect to the fiscal year Cost Growth request, $107.3 million is required for the fiscal year 1982 start-up costs associated with establishing a second shipyard to share CG 47 production. In the fiscal year 1982 Supplemental request, the Navy notified the Congress that a minimum of $80 million would be required to meet these costs. The $80 million request was not approved by Congress on the grounds that the requirement could be addressed in subsequent year budget requests. Since that time the second source requirement has been thoroughly reviewed, and the Navy's best estimate of the additional funds necessary to fully fund the CG 47 program has been determined to be $107.3 million, excluding escalation.

Also included in the fiscal year 1984 Cost Growth request is $25 million, most of which is required to fully fund the construction of the fiscal year 1983 SSN program. The fiscal year 1983 DOD Appropriation Act reduced program reserves ($13.2 million from Project Managers Growth and $10 million from Future Characteristics Changes) which had already been reprogramed and obligated for higher than budgeted basic construction awards and Arctic improvements. As the program is currently budgeted, all program reserves have been eliminated and required future government furnished equipment purchases will not be possible unless additional funding is provided.

The fiscal year 1984 Cost Growth line item also includes $542.4 million for the Trident program. This cost increase consists of $436.0 million of the fiscal year 1981 Trident and $106.4 million for the fiscal year 1978 and prior Trident submarines. With regard to the $436 million Trident Cost Growth, the Senate Appropriations Bill provided approval of a fiscal year 1983 D–5 configuration ship but denied the Cost Growth funds required for installation of the D–5 capability on the fiscal year 1981 ship (SSBN 734). The Navy was directed to use unobligated balances and program reserves to initiate D–5 installation and design on the SSBN 734 pending development of firm cost estimates to be included as a fiscal year 1984 Cost Growth requirement.

An additional $106.4 million represents a portion of Cost Growth associated with the Trident program which will fully fund the first 7 ships (fiscal year 1978 and prior). These funds are required as a result of revised ship delivery dates announced by Electric Boat in March 1981. The $106.4 million requested will be used by the Navy to fund shipbuilding cost increases associated with time-related construction support services such as design and vendor engineering services. The March 1981 delays stretched out the test and certification period for the various ship systems installed aboard these *Ohio* Class submarines. During this extended period the shipbuilder and his associated vendors are required to operate and maintain these systems in lieu of the Navy. These funds were requested in the fiscal year 1982 Supplemental but denied by Congress on the grounds that the requirement could be addressed in subsequent year budget requests.

NAVY LEASING TAKX SHIPS VERSUS NAVY PURCHASING

Senator NUNN. Mr. Sawyer, studies of the relative costs of Navy leasing TAKX ships versus Navy purchase of these ships were performed by the Institute for Defense Analysis and The Argent Group Limited. These studies essentially found that leasing would be less costly than purchasing. These studies and the desirability of leasing these TAKX ships versus buying them have produced the following comments:

From the staff of the Joint Committee on Taxation:

"The Argent study's conclusion ("TAKX Maritime Prepositioning Ships, Relative Financing Costs of Charter and Purchase, Supplemental Report"), that leasing is less expensive than buying TAKX ships, appears to be a result of their inappropriate double-counting of tax reflows."

From the staff of the Congressional Research Service:

"While the cost of leasing can be cheaper to Navy because of cost sharing with the Treasury, there is no way in which a purely financial transaction of this nature can lower the actual cost of acquiring the vessels. The findings reported in the studies result from an erroneous measure of the tax flows."

From the Deputy Assistant Secretary of the Treasury for Tax Analysis:

"Demonstration of the intuitively obvious truth that leasing, per se, cannot reduce the government's cost of obtaining the use of durable capital goods is complicated by budgeting conventions. * * *

"To the extent that a lease arrangement simply involves substituting private financing for public financing, it is more costly than a direct purchase.

From the Navy's viewpoint, is the disagreement over the relative cost of leasing versus buying these TAKX vessels valid?

Secretary SAWYER. Since there were no definitive guidelines within either the executive or Legislative Branches for performing a charter versus purchase analysis, it is not surprising that each party that attempted an analysis for the TAKX program has utilized different methodologies and assumptions. These specific criticisms quoted from the Joint Committee on Taxation in regard to "double-counting" of tax reflows is not valid and apparently stems from an erroneous assumption that the Argent Group Study was based on a pre-tax comparison of the charter costs with a Government purchase to be funded with 100 percent Treasury debt. In fact, the Argent Study assumed that a Government purchase would be for cash and the analysis was made on an after-tax basis. Under the methodology and assumptions utilized by Argent, there was no "double-counting" or other "erroneous measure of the tax flows."

The after-tax methodology employed by the Argent Group results in the consideration of all tax inflows as well as outflows, which provides a more complete analysis than the pre-tax methodology employed by the Joint Committee on Taxation. Under either methodology, there are a number of reasonable combinations of facts and assumptions which result in the conclusion that chartering is less expensive than purchasing the TAKX ships.

Senator NUNN. Mr. Sawyer, the Argent analysis did not look at operating cost of the TAKX vessels or the economic effect of a lease of less than 25 years. Would these considerations make leasing more attractive than buying?

Secretary SAWYER. The total charter period of 25 years, including options, is the optimum length, consistent with the market place, to achieve the lowest present value cost to the Navy. Although there are a number of factors inherent in the time charter arrangement that will result in a more efficient operation, these are difficult to quantify. Therefore, we have taken a conservative approach and assumed that operating costs would be the same whether the Navy time chartered the ships or purchased and contract operated them.

Senator NUNN. Mr. Sawyer, are there other budget and operational considerations that would make leasing of these TAKX vessels a better choice than their purchase?

Secretary SAWYER. Yes, there are a number of budget and operational benefits to chartering the TAKX ships. One very attractive feature of chartering is that the Government is not obligated to expend any funds unless and until a fully satisfactory ship is complete and ready for service. Also, under the charter, the Navy pays for the transportation services as it uses them rather than paying the full cost on day one for a ship to be used for 25 years.

The chartering method places design and construction risks on the private parties while providing substantial operating incentives for the Contractor to ensure that the design and construction produces an efficient and reliable ship. In other words, the Contractor, who is responsible for the design, selection of components, and supervision of construction, bears substantial economic risks in the event that ships turn out to be inefficient or unreliable. The chartering method places much greater responsibility on the private sector while allowing maximum flexibility in the utilization of innovative and commercially sound designs, procedures, and methods in meeting the Navy's transportation needs.

QUESTIONS SUBMITTED BY SENATOR GARY HART

AEGIS RADAR SET

Senator HART. Admiral Walters, is the doppler gate on the Aegis Radar set at a low enough speed to preclude attacks on the CG 47 by missile launching helicopters and other low speed aircraft?

Admiral WALTERS. Aegis has tracked helicopters and low speed aircraft for nine years.

Senator HART. At what speed is the doppler gate set?

Admiral WALTERS. [Deleted.]

Senator HART. Admiral Walters, without a helicopter, what ASW weapons will the DDG-51 have that can take advantage of convergence zone detections of submarines by the ship's towed array sonar?

Admiral WALTERS. Vertically Launched ASROC for near-in detections or an armed SEAHAWK (LAMPS III) helicopter deployed from either CG-47's or DD-963's.

Senator HART. Admiral Walters, on page 19 of your statement you say "CG-47's will also be utilized with *Iowa* Class battleships and other surface combatants to form potent Surface Action Groups." Has the re-commissioning of the battleships led to any projected increase in the CG-47 or DDG-51 programs?

Admiral WALTERS. No.

Senator HART. Are any CG-47's or DDG-51's being justified on the basis of battleship escort?

Admiral WALTERS. Not specifically. Our current surface combatant force level objectives are based on CG-47s and DDG-51s operating as a part of both carrier battle groups and battleship surface action groups. When operating in the surface action group, they are not just battleship escorts; rather they are an integral part of a powerful offensive force which both supplements and compliments the fire power of the carrier battle group.

PHALANX CIWS

Senator HART. Admiral Walters, on page 10 of your statement you say, "The CIWS (Phalanx Close-In Weapon System gatling gun) installations will provide an effective self defense system specifically designed to counter the sea-skimmer family of missiles." In the two tests of date of the CIWS against drones simulating sea-skimmers, did not the missiles strike the ships even though they were hit by fire from the CIWS? What are the implications for the effectiveness of the CIWS?

Admiral WALTERS. The firing tests to which you refer took place in early February. Two separate firing exercises were conducted using BQM-74C aerial target drones to simulate sea-skimmers. The first drone was struck several times by CIWS projectiles and was destroyed, falling into the water. The second drone, likewise, was struck by severl projectiles. It veered from its flight path, struck the water, skipped and impacted the ship. In both cases, the CIWS performed well. The CIWS uses an inert projectile. The kill mechanism against missiles is to impact the warhead with the inert projectiles. The energy transfer to the warhead results in detonation and destruction of the missiles. The drones did not have a warhead. Destruction of drones results from damage to the airframe causing them to crash. The CIWS was effective against both drones. A high speed, low altitude target was engaged and hit by the projectiles. Because there was no warhead to detonate, the normal means of destruction was lacking.

LHD'S

Senator Hart. Admiral Walters, how much different is the design of the LHD from that of the LHA? Is the difference so great as to make it necessary to skip a year after authorizing the first LHD? From a technical and managerial standpoint, how much risk would there be in authorizing the second LHD next year?

Admiral Walters. The LHD differs primarily in the modifications required to provide for the LCAC capability, the AV 8 capability and the CPS capability. The other area of note is the changes to modernize the combat systems capability. However, none of these changes is significant enough to dictate a year gap between the first and second LHD. This time phase is a "typical" gap provided to allow for additional design problem resolution prior to signing for the second ship. At this time there is no identifiable increase in technical or managerial risk by authorizing the second LHD next year.

Questions Submitted by Senator Carl Levin

SHIPBUILDING

Senator Levin. Mr. Secretary, there reportedly was a disagreement between the Navy and the Office of the Secretary of Defense regarding the total cost of the Navy's shipbuilding program during the next five years. The Defense Secretary's Office, although it was later overruled by the Secretary himself, concluded that the shipbuilding program would cost at least $5 billion more than anticipated, according to various reports. Would you agree that DoD differed with the Navy on the cost of the shipbuilding program by as much as $5 billion?

Secretary Sawyer. At the outset, it must be understood that the Office of the Secretary of Defense did no cost estimating of its own and that the "$5 billion disagreement" resulted from a lack of appreciation in the Office of the Secretary of Defense regarding the validity of revised Navy cost estimates submitted during the course of the fiscal year 1984 budget process. When the Navy Program Objective Memorandum (POM) was submitted to the Department of Defense in May of 1982, only the fiscal year 1984 shipbuilding plan had been costed utilizing the criteria of my 22 March 1982 memorandum. The total cost of the five year plan in the POM was $100.634 billion. By the time Navy submitted its fiscal year 1984 budget to the Office of the Secretary of Defense, all five years of the shipbuilding plan had been repriced utilizing my criteria. The cost of the plan at that time was $97.139 billion or a difference of $3.494 billion. During the OSD/OMB budget process, this number was further reduced to $92,767.4 billion which is the total contained in the President's Budget submitted to the Congress in January. This is a difference of $4,372.4 billion from the September Budget submission and a difference of $7,866.6 billion from the original POM number.

Senator Levin. I understand that most of the major ships contained in the 5-year shipbuilding program were involved in the $5 billion cost overrun, is this true?

Secretary Sawyer. The term "$5 billion cost overrun" is one which has been used by the press. No overrun has ever existed in the fiscal year 1984—fiscal year 1988 shipbuilding and conversion account.

Senator Levin. Could you provide for the record the two estimates about which the Navy argued, and could you point out in detail specifically why the Navy believes its estimates are much lower?

Secretary Sawyer. The three steps in the process (Navy POM, Navy Budget, President's Budget) are delineated below:

	Fiscal year—						
	1984	1985	1986	1987	1988	Total	Ships
POM	10,645.6	15,340.8	18,619.4	24,273.3	31,754.9	100,634.0	140
(May)	18/4	20/4	27/2	28/4	30/3		123/17
Budget	12,690.8	15,360.8	17,417.1	22,602.7	29,068.4	97,139.8	139
(September)	17/3	20/5	27/2	28/4	30/3		122/17
Congress	12,698.8	14,699.0	16,796.6	21,248.2	27,324.8	92,767.4	145
Submit (January)	17/6	21/5	28/3	28/4	30/3		124/21

All of the estimates above are Navy estimates. The decision process from POM to President's budget is one of dynamic change as better estimates evolve and more is known about near term economic conditions. For example the September budget contained over $800 million for ship design which in the President's budget is contained in the RDT&E appropriation. The September Budget also contained almost one billion in escalation which by the time the President's budget was submitted had been reduced to $375 million due to improving economic conditions. The lower estimates are not capricious but rather the result of high level management decisions made only after intense internal study and debate of our estimating procedures. They put the Navy on a more business like footing and avoid the self-fulfilling prophecy of higher costs from higher estimates.

Senator LEVIN. Under guidance by the Deputy Secretary of Defense, the service, are supposed to do independent cost estimates of all their major weapons systems, and if they use lower costs estimates than the independent estimates in their budget formulations they are supposed to justify this to DoD. Did the Navy do independent cost estimates on all the ships involved in the supposed $5 billion cost overrun? Were those independent estimates higher than those produced by the program managers for these ships? Which did the Navy use in contending that its budget would not have a $5 billion overrun during the next five years?

Secretary SAWYER. Each year a sample of ship types undergoes an independent cost estimate to ensure the validity of estimates provided by the Chief of Naval Material. Variance over the past few years averages plus or minus five percent on lead and follow ships. The three most recent independent cost comparisons are displayed below:

[In percent]

Ship type	Price difference—independent estimate verses CHNAVMAT estimate	
	Lead ship	Follow ships
LSD-41	-1.6	+4.5
LHD-1	+4	-8.9
DDG-51	-7	+5.8

Note: In all cases, the estimates provided by the Chief of Naval Material were found to be reasonable.

Senator LEVIN. Provide for the record in each case the Justification for selecting the lower cost estimate.

Secretary SAWYER. All estimates attempt to predict the cost of ships whose contracts will not be awarded until the 1985–1988 time frame, and which will not deliver until 8–15 years from now. The highest of the estimates, published in May 1982, was based upon cost estimating assumptions and shipbuilding market place conditions largely prevalent in the 1970's, and in some cases was based upon only conceptual ship designs for cost estimating purposes. The latest estimate, published January 1983, represents the Navy Department's more current cost estimate for ship contracts to be awarded through 1988. This estimate utilized the more complete status of emerging ship designs; reflects conditions now forecast for the U.S. shipbuilding and marine equipment industries for approximately the next decade; and takes into account new acquisition policies and procedures (such as increased competition and contractor incentives for cost control).

The shipbuilding industry is going through a period of internal adjustment brought about in part by the drop in oil production which has tied up the international tanker fleet, and in part by a reduction in general cargo shipping because of the worldwide recession. The shipbuilding industry in the United States has fallen from an average 1981 employment of 184,900 workers to a level of 160,700 in November 1982. As a result of this slackening of demand for commercial new construction work, the Navy is fast becoming the industry's sole new construction customer. Presently, Navy business represents well over 80 percent of the current new construction and conversion backlog in U.S. shipyards. While this situation is distressing in terms of the nation's industrial base, it does carry with it the ancillary effect of creating a more competitive atmosphere, as evidence by the increased number of shipyards expressing interest in the Navy's program. A number of the shipyards now seeking a share of Navy shipbuilding are instituting modular ship construction and pre-outfitting techniques. These modern, more efficient construction techniques allow ships to be built in a manner approaching assembly line fashion. The immediate payoff is shorter construction times and reduced construction costs.

In addition to the shipbuilding industry transition, the suppliers of steel, pumps, engines, pipe, etc., are going through similar lean periods. Manufacturing lead times have decreased significantly over the past 12 months, thus helping to reduce construction times and costs. Since a large percentage of a ship's cost is actually for material from suppliers, the supplier base adjustment also contributes to lower overall ship costs.

Recent award experience indicates that actual awards have, in general, been lower than the funds available for those awards. While some of the savings can be attributed to lower than anticipated inflation rates (4.4 percent) actually experienced during fiscal year 1982 compared to 9.6 percent forecast in January of 1982), bid prices also have been lower than experienced in the past, particularly where there has been competition.

Current experience of favorable contract awards for prime shipbuilding programs, a changing shipbuilding industry characterized by intense competion for and dependence on Navy work, and a Navy shipbuilding program that over the next 5 years will emphasize proportionately higher numbers of less complex auxiliary ships—taken together give high confidence that our acquisition policy improvements are valid and that we will be able to execute our shipbuilding programs, in total, within current Navy estimates. Consequently, the Navy maintains that there is absolutely no validity to suggestions that the current budget is underfunded by $5 billion for 1984–1988, or that overruns can be expected.

Senator LEVIN. What are the remedies you mentioned as available to the government to recoup from contractors overrun costs caused by poor contractor performance? In the past 5 years, how many times has the Navy resorted to these remedies and how much was recovered?

Mr. SAWYER. The "remedies" available to the Government lie within the terms of the contract. In the case of fixed price incentive contracts, which are the most prevalent type for ship construction, the incentive feature provides the remedy. If the contractors' actual cost of performance is less than the target cost, the Government benefits from the reduced cost and the contractor earns additional profit. If the actual cost exceeds target cost, the Government pays a portion of the additonal cost, but the contractors profit is reduced. Therefore, any recoupment is in the form of the contractor sharing in the "overrun" of the target cost. We do not view this natural effect of an incentive feature as truly being a remedy nor the final sharing of above or below target costs as "recovered" costs. Our contracts also provide the additional remedies concerning default and termination provided for in our standard clauses.

SHIPBUILDING CONTRACTS

Senator LEVIN. What type of contracts does the Navy have for each of its major shipbuilding programs? In each case, provide the sharing arrangements between the contractor and the government for cost underruns (savings) or overruns, both above and below the target and ceiling prices.

Mr. SAWYER. The Navy uses the following types of contracts for its major shipbuilding programs:

Cost Plus Fixed Fee (CPFF).
Cost Plus Award Fee (CPAF).
Cost Plus Incentive Fee (CPIF).
Fixed Price Incentive (FPI).
Firm Fixed Price (FFP).

Each of the following programs have the type of contract identified. Types of contracts and their sharing arrangements may vary from program to program or may vary between contracts within a program. When the sharing arrangement is identified, i.e. 70/30, the 70 means that the Government's share of the underrun or overrun of target cost is 70 percent and the contractor's share is 30 percent. When the incurred costs reach the ceiling price, the contractor absorbs all costs. Therefore, there is no sharing of overruns above ceiling price. As CPAF and FFP contracts do not have a sharing arrangement, where such type of contract is identified, no sharing arrangement is shown. Contracts identified within a Program as a "Flite" or "Group" means that, as the program is funded by the Congress, the quantities are combined into a Group or Flite for ease of identification. The First Flite or Group is the earliest funding of that program and the latest Flite or Group is the most recent funding.

[See contract type table submitted to question asked by Senator Cohen.]

SHIPYARD ADVERTISING

Senator **Levin**. Who pays for the advertising about Navy programs by shipyards producing Navy ships—the Navy or the shipyards? How does the Navy determine that it is not being billed—directly or indirectly for these advertising costs? Do the contractors identify their advertising costs in documents submitted to the Navy?

Mr. **Sawyer**. The Defense Acquisition Regulation (DAR) restricts the payment of advertising costs received in the performance of DOD Contracts to (1) recruitment of personnel required for the performance of the contract; (2) procurement of scarce items for the performance of the contract; (3) disposal of scrap or surplus material acquired in the performance of the contract. DAR specifically disallows advertising costs related to sales promotion. The Navy ensures that it is not being billed, either directly or indirectly, by periodic audits performed by the Defense Contract Audit Agency which applies the DAR criteria for allowability and allocability of costs chargeable to DOD contracts. Cost Accounting Standard 405 requires contractors to identify and exclude from any billing, unallowable costs.

UNUSUAL CLAUSES IN THE LEASE AGREEMENT

Senator **Levin**. There has been talk in the Congress of amending the provisions in the tax code to remove the incentive for long-term leasing of this type of equipment to the federal government. If such changes were made, what would be the status of these contracts?

Is it true that the Navy has indemnified the Shipbuilders against changes in tax code?

Mr. **Sawyer**. The Navy has not indemnified the Shipbuilders for anything. The TAKX contracts provide that capital hire payments will be adjusted in the event there is a change in tax law between the date of the best and final offer (August 17, 1982) and the delivery of each ship. Since the charter hire pricing was based on the then current tax law, this provision protects both the shipowners and the Navy since neither is able to predict the impact of possible changes in tax law during the next two or three years.

Senator **Levin**. What about adverse rulings by the Commissioner of the IRS on the designation of the contract between the operator and the Navy as a service contract?

Is it true that the Navy has indemnified the shipowner against adverse rulings by the Commissioner of the IRS?

Mr. **Sawyer**. The charter hire rates in the contract are based on the assumption that the time charter is a service contract and the shipowner is entitled to claim the Investment Tax Credit. The contracts provide that in the event the IRS rules that the time charters are not service contracts and Investment Tax Credit is not available, then the charter hire will be adjusted accordingly. This would increase charter hire approximately $2.8 million per year per ship. It's noted that without such a provision, the shipowners would have originally priced the charter hire on the assumption that the Investment Tax Credit was not available and thereby reaped a windfall if it was later determined to be available.

Senator **Levin**. Is it also true that the Navy has promised the shipowner the cost of legal counsel for any ruling the Navy agrees to challenge?

Mr. **Sawyer**. The Navy is only obligated to indemnify the shipowner for legal expenses incurred in contest actions with the IRS in the event the Navy requests such action. It's inconceivable that the Navy would make such a request unless it's necessary to seek a clarification of the extent and cause of a disallowance.

Senator **Levin**. Since when does one branch of the government offer to pay a contractor's legal costs to challenge another branch of the government?

Is this type of clause ever included in other Navy contracts?

If so will you please provide examples for the record?

Mr. **Sawyer**. The payment to be made by the Navy is in the nature of an equitable adjustment. A contractor's legal expenses incurred in preparing and documenting a request for an equitable adjustment are allowable costs under Defense Acquisition Regulations. The contest action with the IRS which is contemplated by this provision is in the nature of an administrative proceeding to seek additional clarification and explanation from the IRS so that the exact extent of the equitable adjustment due from the Navy may be determined. It must be kept in mind that the Navy has not provided a blanket indemnity for all loss of tax benefits for any reason. Rather, the Navy's indemnity obligations only cover a few very narrow events and only a portion of the shipowner's tax benefits. Thus, a disallowance action by the IRS could cover a number of events that are not covered by the Navy's indemnity obligation as well as those that are. Therefore, it may well be necessary to compel further administrative action by the IRS to delineate the exact causes and amounts of disallowance for which the Navy might be responsible.

HIDDEN COSTS ISSUE

Senator **Levin**. To what extent does the choice to lease ships reflect the Navy's belief that it doesn't have the money to buy the shipbuilding program it believes it needs and is attempting to let reduced tax revenues foot part of the bill?

Mr. **Sawyer**. The decision to charter the TAKX ships was not made because the Navy believed that Congress would not appropriate money to purchase these vital ships. Rather, the decision was made because chartering is in compliance with policy of Congress, as expressed in the Merchant Marine Act, 1936 as amended, and the Navy to rely on the U.S. Merchant Marine to meet defense ocean transportation needs to the extent practicable. In addition, the Navy believes that chartering is a more cost effective and expeditious method of procuring this transportation service than purchasing the ships.

Senator **Levin**. To what extent is this idea an attempt to move these ships out of the highly visible procurement accounts of the budget and into the less scrutinized O&M accounts?

Mr. **Sawyer**. The decision to charter the TAKX ships was not in any manner an attempt to reduce the visibility of the program. A complete report and numerous briefings on the program were given to the House and Senate Armed Services and Appropriations Committees and their staffs. In addition, hearings were held by the Readiness Subcommittee of the House Armed Services Committee in September 1982 prior to the finalization of contract awards.

Senator **Levin**. How can we be certain that Navy still retains the incentive to select the least costly method of procurement when the agency is not accountable to the Congress, or anybody in the government for the full purchase price of the items it buys?

Mr. **Sawyer**. The Navy has and will continue to exercise prudent management and business judgment in all its procurement decisions regardless of the degree of visibility or procedural accountability. It is also anticipated that OMB will provide more definitive guidelines and procedures for future chartering or lease vs. purchase decisions.

Senator **Levin**. What would be the costs involved in extricating ourselves from these contracts?

Would those costs be greater than the $270 million extra being paid for these ships over the life of the contract?

Mr. **Sawyer**. The Navy believes that chartering the TAKX ships is less expensive for the Navy and total Government than a purchase. The alleged $270 million of extra costs comes from a February 25, 1983 report prepared by the Staff of the Joint Committee on Taxation (JCT). The methodology and assumptions utilized by the Staff of the JCT were very different from the methodology and assumptions utilized in the four prior analyses prepared by experts inside and Government. The conclusions reached in all four prior analyses was that chartering the TAKX ships was substnatially less expensive than purchase. Bascially, the Staff of the JCT used a pre-tax methodology which counted all tax outflows but only a portion of the tax outflows in the transaction and also assumed that a Government purchase would have been 100 percent financed by the issuance of a Treasury debt. The other studies used an after-tax methodology and assumed a Government purchase for cash.

If, upon completion of its review of the program, Congress is still convinced that chartering is in fact more expensive than purchasing, the Government has the contractual option of purchasing the ships upon completion rather than going forward with the charters. The Navy could also terminate the contracts for convenience but that would cost at least several hundred million dollars and substantially delay the availability of the sealift capability vital to the Rapid Deployment Force.

Questions Submitted by Senator Henry M. Jackson

SHIPYARD SECURITY

Senator **Jackson**. Mr. Sawyer, what actions are contemplated in the next fiscal year to address the problem of shipyard security?

Mr. **Sawyer**. Action has been taken at Newport News Shipbuilding and Electric Boat, as well as at the Naval Shipyards. Currently, Electric Boat Division and Newport News Shipbuilding and Drydock Corp. have submitted proposals for upgrading physical security, in response to a Navy Request for Proposal. These proposals are currrently being evaluated. Additionally, the Naval Sea Systems Command is planning to evaluate the effectiveness of a variety of security systems which can be applied in shipyards. An array of intrusion detection systems and surveillance systems will be tested. Further, naval shipyards are reviewing and upgrading security procedures including: personnel access controls (badging), surveillance systems, security training for all personnel, formal support agreements with local, federal, military, state, city/county law enforcement agencies, and ship forces.

Senator **Jackson**. Mr. Sawyer, if corrective measures are planned, what is the estimated cost to the Navy for this effort? Does the Navy have funds available or already earmarked for this purpose?

Mr. **Sawyer**. While the Navy has identified the general type of security/control required, the specific equipment needs have not been identified. Therefore final cost estimates are not yet available. Preliminary estimates of one-time costs for installing effective physical security systems range from $2 to $4 million per shipyard. An additional $2 to $3 million per shipyard is estimated to be required annually to accomplish security system training, maintenance, and personnel upgrade. Initial requirements will be funded by reallocation of current Navy resources. Outyear requirements will be programmed and budgeted in accordance with normal Navy and DoD procedures.

Senator **Jackson**. Mr. Sawyer, in response to a breakdown in security at Electric Boat, the Armed Servies Committee held a hearing last August on general security conditions at civilian and military shipyards. Since that time, what has the Navy done to improve security at these shipyard?

Mr. **Sawyer**. The Navy established a Shipyard Security Review Group that studied the problem and made recommendations on how to improve shipyard physical security. These recommendations are being implemented by the Naval Sea Systems Command's Shipyard Physical Security office. Electric Boat and Newport News have responded to a Navy Request for Proposal to improve security. These responses are currently being evaluated. Navy shipyards were directed to make certain immediate improvements within available resources and to provide plans for long-term improvements to the Naval Sea Systems Command for a coordinated review.

Senator **Jackson**. Mr. Sawyer, in addition to potential damage to Navy vessels and shipyards, and the possible loss of classified data and technology, does the security problem at our shipyards also include the theft of Navy material?

Mr. **Sawyer**. Theft in shipyards is a potential problem as it is any industrial activity with large numbers of employees and substantial amounts of pilferable material. The Navy has an on-going program to reduce theft losses. Some of the improvements undertaken to improve physical security will also help to reduce the potential theft opportunities.

Senator **Quayle**. Thank you, gentlemen, for your cooperation.

The committee is adjourned.

[Whereupon, at 12:30 p.m., the subcommittee proceeded to other business.]

DEPARTMENT OF DEFENSE AUTHORIZATION FOR APPROPRIATIONS FOR FISCAL YEAR 1984

WEDNESDAY, MARCH 23, 1983

U.S. SENATE,
SUBCOMMITTEE ON SEA POWER AND FORCE PROJECTION,
COMMITTEE ON ARMED SERVICES,
Washington, D.C.

U.S. CENTRAL COMMAND AND U.S. READINESS COMMAND

The subcommittee met in open session at 2:05 p.m., in room SR-232A, Russell Senate Office Building, Senator William S. Cohen (chairman) presiding.

Member present: Senator Cohen.

Staff present: L. Wayne Arny III and James R. Locher III, professional staff members; Drew A. Harker, Mark B. Robinson, Judith A. Freedman, research assistants; and Kathleen L. McGuire, staff assistant.

Also present: Jim Dykstra, assistant to Senator Cohen; Arnold Punaro, assistant to Senator Nunn; Bill Lind, assistant to Senator Hart; and Peter D. Lennon, assistant to Senator Levin.

OPENING STATEMENT BY SENATOR WILLIAM S. COHEN, CHAIRMAN

Senator COHEN. The subcommittee will come to order.

This afternoon's session concerning the U.S. Central Command and the U.S. Readiness Command is the subcommittee's first hearing this year on force projection issues. These two unified commands are at the forefront of U.S. force projection planning and execution.

The U.S. Central Command has geographic responsibility for the Persian Gulf/Southwest Asia region which has been the main focus on U.S. rapid deployment plans and programs. The U.S. Readiness Command has responsibility for U.S.-based strategic reserve forces which would be reinforcing units in times of crisis.

The principal purpose of this initial force projection hearing is to provide an understanding of force projection organizations and relationships, their mission responsibilities, and the resource growth allocated to the various headquarters.

Not only are these topics within the oversight responsibilities of the subcommittee, but in addition, this understanding will be useful as the subcommittee addresses force projection programmatic issues in subsequent hearings.

On behalf of the subcommittee, I extend a warm welcome to the five witnesses for today's hearing: Lieutenant General Kingston, commander in chief of the U.S. Central Command; Rear Admiral Hunter and Major General Baginski from the U.S. Readiness Command; Dr. Blaker, Deputy Assistant Secretary of Defense for Policy Analysis; and Brigadier General Klein from Plans and Policy in the Organization of the Joint Chiefs of Staff.

The subcommittee is anxious to hear the testimony of the witnesses.

By letter, Senator Nunn and I have provided the witnesses with a list of key topics for today's hearing. I would like to briefly summarize the six issues that we identified.

First, the relationships of the U.S. Central Command, U.S. Readiness Command, and the Rapid Deployment Force need to be comprehensively explained for the benefit of the subcommittee and indeed for the Congress at large.

Second, the growth in resources allocated to the headquarters of these organizations needs to be identified and justified. There have been assertions that an enormous bureaucratic growth in these headquarters has occurred and is unjustified.

Third, the subcommittee seeks an improved understanding of the impact of postulated employments of the Rapid Deployment Force on U.S. warfighting capability in a simultaneous or near simultaneous NATO-Warsaw Pact conflict.

Fourth, the subcommittee desires to hear the views of the Readiness Command on the proposal to establish a Military Transportation Command.

The last two issues are ones for which the subcommittee will probably need to reconvene in executive session to receive the necessary testimony. These issues are the geographic boundaries of the U.S. Central Command and a status report on plans to establish a forward headquarters element for this command.

We expect a number of our colleagues to join us.

Dr. Blaker, why don't you proceed with your opening statement.

STATEMENT OF DR. JAMES R. BLAKER, DEPUTY ASSISTANT SECRETARY OF DEFENSE (POLICY ANALYSIS)

Dr. **Blaker**. Thank you very much, Mr. Chairman.

I would like to summarize my statement and begin by expressing our appreciation for this session. I would like to introduce Mr. Beers who is representing the State Department's Bureau of Political and Military Affairs.

USCENTCOM was activated on January 1 of this year. The formation of this unified command came after a great deal of analysis and discussion within the Pentagon. Much of that had been stimulated and prompted by this committee.

Indeed, we recognize that USCENTCOM would probably not exist today except for your initiative. We are very much appreciative of that.

USCENTCOM now exists and it is probably time to go back over some of the terminology that has grown up over the last several years.

The rapid deployment joint task force is a term which we no longer use. I would also like to point out that rapid deployment force, if it is portrayed in all capital letters, is a term that we are in the process of trying to expurgate, in the sense that we are trying to move away from the connotation of a rapid deployment force with a specific geographical mission.

We now like to use the term rapidly deployable forces, and, by that, try to connote a reservoir or pool of combat forces from which any unified commander can draw upon.

You have asked us to discuss the relationship between the U.S. Central Command and U.S. Readiness Command and we are prepared to try to do this in detail. From a broad perspective, I would like to say that the way I try to distinguish between them is in terms of their potential combat roles. U.S. Central Command [USCENTCOM], would command U.S. forces if they were used in Southwest Asia. Therefore, the Commander of USCENTCOM has to, among other things, plan in great detail how to use those forces in Southwest Asia.

USREDCOM has no direct combat role in Southwest Asia, but it is charged with the responsibility of assuring that the rapidly deployable ground and air forces which are stationed in the United States can fight in Southwest Asia, or in Europe, or anywhere they might be sent.

So, USCENTCOM and REDCOM have to work very closely with each other and they do so, particularly in such areas as training, doctrine, and exercising the forces that might have to be used in Southwest Asia.

Senator **Cohen**. REDCOM would have to work closely with any of these separate commands?

Dr. **Blaker**. Yes, sir.

Take the area of training, for instance. General Kingston's concern in training has to stem from the fact that he wants his forces, the forces that would be used in Southwest Asia, to be trained to be very effective in that area. USREDCOM necessarily wants to help make sure that the forces that might be used in Southwest Asia are also trained to be effective there. But USREDCOM has the responsibility of making sure that forces that might be used elsewhere are trained to be effective in those areas, also.

So, in specific cases such as the 82d Airborne Division, General Kingston wants to make sure that that division can operate and is trained to operate in his area. USREDCOM is very much interested in making sure that is the case, but also that the airborne division can operate and be effective in other unified command areas. So, while they have common interests in training, USREDCOM's interest is in a sense broader.

Senator **Cohen**. Are there specific forces which are given specialized treatment and training so that when fighting desert warfare, for example, they need to have different capabilities, endurances, and perhaps equipment and have been trained accordingly, as opposed to, say, going to the NATO battlefront?

Are you designating troops with that training mission even though the REDCOM has a wider distribution of responsibility?

Dr. **Blaker**. In the case of some units, we are more interested in having them trained in desert warfare, for example, than others. I would like to pass this off to one of the experts.

You also asked us about headquarters personnel. In my statement I have tried to provide some figures which might be of some use. The numbers of personnel slots, that is, the number of authorized positions, in USCENTCOM headquarters now is 967. That will be reduced by 121 positions as of the 1st of October of this year.

Now, the figure of 846, which is the figure that they will be at as of October—and, by the way, a figure that we do not anticipate growing for at least 5 years—is higher than EUCOM or PACOM headquarters per se. But it does not include the personnel slots of the service component headquarters which are assigned to each unified command.

You get a truer picture, I think, of the number of people who are performing headquarters functions for the unified commands if you include the personnel of the service component headquarters. When this is done, for example, USCENTCOM headquarters personnel turn out to be less than about half those of EUCOM and about three-quarters those of PACOM.

We do not come up with the number of headquarters personnel as a result of trying to compare the different unified commands. We calculate the number of personnel based on what tasks are likely to be assigned to the unified commander.

Now, these are tasks which include more than just planning as of this date or as of the first of January of this year. The Commander of USCENTCOM is now responsible not only for planning how our forces are to be used, but implementing those plans if that is necessary and for operational control of those forces in his area of responsibility.

In the event of crisis, he would be charged with commanding what could be very large forces, initially up to four divisions and, in theory, much higher. He would have to do this in a geographical area of some expanse. It is the demand of this type of mission which generates the numbers of personnel that we think these headquarters should have.

Which brings me to two related issues, how we drew the boundaries of the unified command and what we would like to do with a forward headquarters in Southwest Asia.

On the boundary issue, there were two driving considerations: how various nations might best fit into our general military strategy for both peacetime and wartime operations, and, second, which unified command could best control and support the U.S. forces which might be used in Southwest Asia.

We believe the current USCENTCOM boundaries make the most sense for the time being. There is nothing immutable about them and they are and will be reviewed regularly.

On the issue of the forward headquarters, we have looked at this in some detail and would like to share the results of our analysis with you in the executive session.

Senator **Cohen**. What about a sea-based forward headquarters?

Dr. **Blaker**. Yes, sir.

Finally, something I found to be interesting. The Congressional Budget Office report recently published on the rapid deployment forces provides what I thought was a good description of some of the issues involved in our effort. But there may be some implications in the report that were unfortunate.

Briefly, I believe it would be wrong to see the pool of rapidly deployable forces restricted to use in Southwest Asia. The fact that we are developing the capability to move and employ significant levels of military forces in Southwest Asia does not mean that the forces on which we are building this capability are necessarily lost to the defense of NATO.

We can try to go into that in some detail in the executive session, but the CBO report, I believe, is right in highlighting the fact that we do not have enough forces, or the airlift and sealift with which to move them, to have the luxury of assigning all or even individual components of what we have designated as the rapidly deployable forces exclusively to USCENTCOM, or to any other unified command.

But we are going to live without that luxury for some time and the problem, as we see it, is making what we have as flexible and as effective as possible, not in trying to build the military resources which would be necessary to allow all of our unified commanders exclusive call on rapidly deployable forces.

Sir, I think I will end it there.

[The prepared statement of Dr. Blaker follows:]

PREPARED STATEMENT BY JAMES R. BLAKER, DEPUTY ASSISTANT SECRETARY OF DEFENSE FOR POLICY ANALYSIS

Mr. Chairman and members of the committee: I appreciate the opportunity to appear before the committee to discuss our defense policy and, in particular, command arrangements for Southwest Asia.

Over the past four years, our Southwest Asia strategy has matured and been integrated into our overall defense policy. We have gone from a time when relatively little strategic thought was applied to the region, when we had few access arrangements, and the day-to-day US military presence consisted of three ships in the Persian Gulf. Today, things are considerably different—and they are continuing to change.

One of the most important changes was the formal establishment of the new unified command for Southwest Asia, US Central Command, on January 1, 1983. Secretary Weinberger announced in the spring of 1981 that a new unified command would be formed. The President enthusiastically endorsed this approach and, on December 2, 1982, he formally approved establishing the command. This was, as you know, the culmination of extensive consideration in the Pentagon, considerations which in large part were stimulated by your committee. Indeed, Mr. Chairman, we recognize you played an instrumental role last December in establishing USCENTCOM and we appreciate greatly your support. The first new unified command to be established in over two decades would not be here today except for the action of your committee.

Because the command is new, I'd like to sketch briefly some of the relationships USCENTCOM has to other unified commands, and, in particular, to the United States Readiness Command. USCENTCOM, like our unified commands in the Pacific or Europe, has operational command of the U.S. ground, air and naval general purpose forces in its geographic area of responsibility. This applies in both peacetime and in periods of conflict; and, in the latter case, USCENTCOM would command and employ U.S. forces in combat in Southwest Asia. So, while the command is charged with representational requirements in peacetime, and, beginning this October, will assume military assistance activities, its primary concern has been how U.S. forces would be used in combat in Southwest Asia. This focus will continue to absorb the attention of USCENTCOM—as it should—because the command was created for the clearly expressed purpose of alerting potential aggressors that the United States has the will and the means of opposing military aggression with military force if that becomes necessary in Southwest Asia.

It is the potential combat role in Southwest Asia which distinguishes USCENTCOM from REDCOM. U.S. Readiness Command is, in broad terms, charged with preparing the U.S. ground and air forces based in the United States for delivery to, and employment by other unified commanders. REDCOM concentrates on how to get forces located in the United States prepared for the uses the unified commanders outside the U.S. plan for those forces and on getting forces to General Kingston, or other unified commanders, when, and in the increments the unified commanders need them. REDCOM does not decide what unified commander gets forces in a crisis, nor in the event of simultaneous crises, would REDCOM decide which unified commander had first call on our forces stationed in the United States. That responsibility rests with the National Command Authorities. But, while the Army and Air Force units are stationed in the United States, REDCOM exercises overall operational control of them. Control of these forces passes from REDCOM to commanders abroad when the forces are transferred to unified commands such as USCENTCOM.

There is ambiguity in the broad distinction I have drawn between REDCOM and other unified commands, for, as you know, parts of the world have not been assigned to a unified commander in the same manner in which USCENTCOM is responsible for Southwest Asia or PACOM is responsible for the Pacific and Indian Oceans. This ambiguity may have been heightened because, prior to the formation of USCENTCOM, the Rapid Deployment Joint Task Force was charged, formally at least, with contingency planning for the use of rapidly deployable forces "worldwide." In reality, however, the RDJTF's planning effort was absorbed almost entirely by concern with Southwest Asia.

When USCENTCOM replaced the Rapid Deployment Joint Task Force, its contingency planning responsibilities were restricted to its specific geographic area of responsibility. Planning for the use of rapidly deployable forces in the few "unassigned" areas reverted to REDCOM's responsibility. I should note that the areas we're talking about are not those in which the use of U.S. military force is thought very likely—that's why they lie outside the assigned areas of responsiblity of other unified commands.

Mr. Chairman, you have requested information on the manpower resources allocated to the U.S. Readiness Command and to the U.S. Central Command and I'd like to provide some data which may be helpful.

Table I compares the numbers of authorized personnel in the RDJTF, its successor, USCENTCOM, and in REDCOM over the last several years and, to the extent we can now forecast it, into the next half decade.

TABLE I.—MANPOWER ALLOCATION [1]

	1980	1981	1982	1983	Projected 1984–88
RDJTF [2]	272	569	967		
USCENTCOM				967	846
REDCOM	322	340	361	364	370

[1] Authorized personnel billets.
[2] RDJTF disestablished with formation of USCENTCOM.

These figures need some background explanation. First, it's important to note that we're comparing the numbers of personnel in two headquarters which are charged with different missions. While some of the functions performed by the people in each headquarters may seem to be the same, the purpose of their work is considerably different, as is the information and data they organize, analyze, transmit and act upon. There is no duplication of effort, because while REDCOM and USCENTCOM must work together closely, they are charged with solving separate parts of the complex problem of getting U.S. forces ready to fight in Southwest Asia, getting them there, and employing them successfully in the theater.

Second, I'd like to point out that the headquarters personnel which have been assigned to USCENTCOM have not come from an expansion of active duty end strength. The Services have provided the headquarters manpower by transfering personnel from other units and organizations. We do not plan to increase current personnel authorizations for USCENTCOM headquarters, nor ask for increases in Service manpower end strength to cover those billets.

Finally, I'd like to compare briefly the number of personnel in the USCENTCOM headquarters with unified commands which are analogous in missions to USCENT-

COM: EUCOM and PACOM. Table II portrays the number of authorized personnel for the three command headquarters and for the Service component headquarters which are assigned to each unified command. As the table shows, the number of USCENTCOM headquarters personnel is relatively high. But when compared in terms of numbers of headquarters personnel per se, plus the people who work in the Service component headquarters which support the unified commanders, the picture is considerably different. We intend to increase the personnel authorizations for USCENTCOM's component headquarters by less than 100 billets. But even with these increases, the numbers of personnel in the command's headquarters and the Service components will be less than half the comparable number in EUCOM and about 75 percent the number in PACOM.

TABLE II.—COMPARISON OF HEADQUARTER'S PERSONNEL

	USCENTCOM	EUCOM	PACOM
Headquarters	846	483	650
Service components	231	2,157	827
Total	1,077	2,640	1,477

As you know, the Congressional Budget Office has recently published a report on "Rapid Deployment Forces." As an alumnus of the CBO, I must say that I think the report has maintained the good reputation of that office.

But some of the issues raised by the report are worth commenting upon because incorrect implications might be drawn from some of the views expressed. Specifically, I'd like to comment on the strategic implications of having rapidly deployable forces from which USCENTCOM could draw in the event of a crisis. You will note that I hesitate to use the term "Rapid Deployment Force" as if there existed a separate force entity, with a unique, geographically bound mission. This is an unfortunate connotation which I believe confuses what we are trying to do, and I think it is more conceptually valid to bear in mind that the forces available to USCENTCOM are not excluded from use elsewhere. USCENTCOM is not the only unified command which could have a need for rapidly deployable forces, and as a result, we have identified some units which, either because of their character or because of their location in the United States, could be deployed abroad to many areas relatively rapidly.

These forces constitute a pool of military power from which all unified commands can draw, depending on the crisis they face. USCENTCOM develops contingency plans on the assumption that certain rapidly deployable forces would be available for use in its area of responsibility. It identifies the levels and character of the forces that would be needed to meet a range of military problems, up to and including a major Soviet military invasion of the area. But, we do not have enough forces, nor the airlift and sealift with which to move them, to have the luxury of assigning all, or even individual components, of this force reservoir exclusively to USCENTCOM or any other unified commander. And, in a crisis, the decision on how much force should be deployed, where, and when, would rest with national authorities, not commanders in the field.

Thus, it would be a mistake to imply, as I'm afraid the CBO study sometimes does, that the new unified command for Southwest Asia will somehow reduce the level of U.S. military force which could be committed to the defense of Europe, or, that because USCENTCOM plans on using units such as the 82nd Airborne Division, the divisions could not be employed elsewhere, or that a military crisis in the Persian Gulf area would automatically trigger a drawdown of forces which might otherwise be used in Europe should a subsequent crisis there develop. The system is flexible enough to avoid this, and although it rests ultimately on the judgment of senior military and civilian leaders at the national level on when and where to commit U.S. military forces abroad, neither the identification of rapidly deployable forces nor the creation of USCENTCOM has increased the risk in defending NATO.

On the contrary. We believe that the defense of NATO was made increasingly difficult by the situation which emerged clearly in the late 1970s; namely, the growth of Soviet capability to project military force into that unstable region of the world which supplied the West with much of its petroleum, and in which the West did not have a strong military counter to the Soviet Union, nor the command arrangements to receive and employ military force there effectively. The United States, in full consultation with our NATO allies, moved to correct this situation, and, as a result, we believe NATO defenses have been bolstered, not eroded.

USCENTCOM has responsibility for the region extending from Egypt to Pakistan, and from Iran to Kenya, plus the Red Sea and Persian Gulf. Determining the precise boundaries of USCENTCOM's area of responsibility was complex because many factors had to be considered. But, there were two major considerations: (1) how various states might best fit into our general military strategy for both peacetime and wartime operations, and (2) which unified command could best control and support the U.S. forces which might be used in Southwest Asia. The first consideration helped define which regional nations would be of primary interest to the new command; the second helped define how the water boundary between USCENTCOM and PACOM was to be drawn.

We believe the current USCENTCOM boundaries make the most sense for the time being. There is nothing immutable about them, and, indeed, the geographic boundaries of the unified command are reviewed regularly by the JCS and Secretary of Defense each year. Changes to unified command boundaries have been made in the past and we do not exclude changes in the future for USCENTCOM.

This committee has also inquired about a forward headquarters. As you know, the present headquarters is located at MacDill Air Force Base in Tampa, Florida. Thus, unlike other regional unified commands, USCENTCOM must presently perform its functions without a headquarters in its area of responsibility. This situation, which hampers the command's credibility and effectiveness, could be improved significantly by establishing a forward headquarters element in Southwest Asia. The primary purposes of a forward headquarters would be to represent the Commander in the region, to assist in planning exercises and administering the security assistance program, and to serve, if necessary, as the combat headquarters during the transition from peacetime to wartime operations. The Administration is examining the possibilities of locating a forward headquarters in the region. We are fully aware of the regional sensitivities involved and weigh them carefully against the military benefits that would accrue from having a headquarters element in the region. Once this examination is completed, we will be in a position to begin discussions with regional nations. We also know that the Congress is concerned with the issue and we will work closely with you on the problem.

Mr. Chairman, our Southwest Asia strategy and ability to implement it are in better shape today than four years ago. Foremost, we want to deter open armed conflict whether that conflict is generated from instability within the region or by the threat of Soviet aggression. To do this, deterrence must be credible. For it to be credible, we must be perceived by potential adversaries as having the military capability and national will to meet and defeat aggression. The formation of USCENTCOM and the continued efforts of REDCOM, as well as the acceleration of programs to improve our military capabilities, are steps in the right direction.

We believe that we now have a good foundation in place to build effective working relationships with regional states, to help them improve self-defense capabilities, and to enhance U.S. credibility in bolstering the region's security against Soviet and radical threats. It will require a sustained effort, and the continued support of this committee is much appreciated.

Thank you.

Senator COHEN. If you will hold it there for a moment, gentlemen, I have to vote. We will recess for 10 minutes.

[Recess.]

Senator COHEN. The committee will resume.

General Kingston?

STATEMENT OF LT. GEN. ROBERT C. KINGSTON, U.S. ARMY, COMMANDER IN CHIEF, U.S. CENTRAL COMMAND

General KINGSTON. Mr. Chairman, I appreciate the opportunity to meet with you again this year to discuss the U.S. Central Command.

Before I present my statement I would like to introduce Brigadier General Franklin and Commodore Gleim from my headquarters.

I have submitted a more complete statement for the record and with your permission I will provide a summary of that statement now.

Senator COHEN. The full statement will be included, gentlemen.

General KINGSTON. In my judgment the activation of the Central Command in January of this year marked a very positive and important milestone in our Nation's relationship with the nations of Southwest Asia, the Persian Gulf, and the Horn of Africa.

I would like to express my personal and official gratitude to you, Mr. Chairman and members of the Senate Armed Services Committee, for your help in getting the new command off to a good start, and on time.

Activation of the U.S. Central Command brought to fruition a major change to the unified command structure developed by this country after World War II. This change provided a new theater command which I believe is better able to serve the interests of the United States and the security concerns of the friendly nations in a critically important part of the world.

As you know, the U.S. Central Command evolved over a period of about 3 years from the rapid deployment joint task force, a command created in March 1980 as a temporary solution to a long-term problem. I commanded the rapid deployment joint task force for its last 18 months and I can tell you I am very proud of the work that that organization did.

As commander in chief of the U.S. Central Command, which is only 3 months old, I cannot sit here today and tell you that we have solved all the challenges ahead of us. I appreciate the opportunity to address some of these issues that this subcommittee has indicated an interest in.

First, the relationship between the U.S. Readiness Command, U.S. Central Command, and the rapid deployment force. As a unified commander, my relationship with the U.S. Readiness Command is similar to my relationship with other unified commands, but this is tempered by several realities.

First, the U.S. Central Command is collocated on the same base with the U.S. Readiness Command.

Second, the U.S. Central Command is a direct descendant of the U.S. Readiness Command.

Third, and perhaps most important, the two commands are assigned different missions and functions.

The U.S. Readiness Command focuses on U.S. readiness and exercise programs for our forces in the United States and on the reinforcement problem.

The U.S. Central Command focuses on its area of responsibility and the peacetime and wartime responsibilities of an area commander in chief.

I would like to point out, Mr. Chairman, that the evolution of the rapid deployment joint task force into the U.S. Central Command did not reduce the rapid deployment force from a strong viable force to nothing. The same forces of the Army, Navy, Air Force, and Marines which could have been used for rapid deployment on December 31 of last year can be used in the same way today in my area of responsibility.

On the subject of manpower I would like to make the point that no new spaces have been created by the establishment of the U.S. Central Command. In fact, we have recently taken a reduction of 121 billets, as just mentioned by Dr. Blaker.

The Central Command is currently authorized a total of 846 personnel and as previously stated, just this year we have had a reduction of 121 spaces. We have grown to our current strength over the past 3 years as a result of major increases in responsibilities.

Because we are located in the United States, a forward headquarters element for the command, I believe, is desirable in my area of responsibility. By forward presence I do not mean large numbers of troops or military units. What I mean is a limited presence of personnel from my headquarters to perform what is essentially a liaison function.

Before leaving the subject I would like to say that I believe it would be a mistake to have a forward headquarters element aboard a U.S. Navy ship in the area. While at a glance this may seem attractive, I believe in the long run it would send the wrong message to our friends and foes alike in the area. The U.S. Navy force levels would also have to be increased to provide a ship dedicated to this mission.

I would like to address two areas of particular concern to me as commander in chief of the U.S. Central Command.

The first is the pressing need this Nation has for more lift. When I say more lift I mean more lift capability, both sealift and airlift. This is one of the most pressing needs of the Central Command.

When you consider that my forces are 7,000 miles from the theater where they may have to fight, and I think 7,000 miles one way is a long way to commute, we need the airlift up front to move my forces to the theater on short notice and move them within the theater once we get there.

Sealift is needed to move our outsize equipment and bulk cargo and to keep our forces supplied in any extended conflict. Sealift and airlift provide the cornerstone of this Nation's ability to move combat forces and fight them where they are needed.

The shortfalls in sealift and airlift are serious and I believe that the President's budget has taken a large step in the right direction toward getting the problem solved.

The second area of concern I have is that the U.S. Central Command also has some significant problems in the area of command and control communications. I need to communicate with my forces more quickly, more reliably, and more securely than I can now.

I ask the help of this committee in making it so when future programs are presented to you.

In summary, Mr. Chairman, I believe that the U.S. Central Command represents a major step forward in the evolution of the U.S. military relationship to the nations in the area. I believe that the Central Command and rapid deployment joint task force people have accomplished more in 3 years than even our staunchest advocates thought possible.

Again, I want to express my thanks to you, Mr. Chairman and members of this committee, for your support in the creation of the U.S. Central Command. I want to reiterate in closing that in my judgment the U.S. Central Command is vital to the national interest and with your continued support I believe we can do the job.

I would like to add also that I realize that you and members of this committee have received certain criticism from some of your colleagues for the formation of this command. I think you have done the right thing, Mr. Chairman, and I am saying that now as the present commander, but obviously I will not be the commander forever.

I think this country needs the Central Command and I think it needs the deployment and employment capability that this committee and yourself have been working for.

Thank you.

[The prepared statement of General Kingston follows:]

PREPARED STATEMENT OF LT. GEN. ROBERT C. KINGSTON, U.S. ARMY, COMMANDER IN CHIEF, U.S. CENTRAL COMMAND

Mr. Chairman and members of this Committee, I appreciate the opportunity to meet with you and discuss the United States Central Command.

In my judgment, activation of the United States Central Command on January 1 1983, marked a very positive and important milestone in the evolution of our nation's relationship with nations of Southwest Asia, the Persian Gulf, and the Horn of Africa. As commander in chief of the U.S. Central Command, I would like to express my personal and official gratitude to you, Mr. Chairman, and to the members of the entire Senate Armed Services Committee for your efforts in getting the new command off to a good start, on schedule, on January 1st.

Activation of the U.S. Central Command brought to fruition a major change to the unified command structure developed for this country in the wake of World War II. This change provided a new theater command, which I believe is better able to serve United States interests and the security concerns of friendly nations in a critically important part of the world.

When the unified command structure was created at the end of World War II, I do not believe it was possible to foresee the significant security and economic issues the United States would have in this region in the 1980's.

Under the plan devised after World War II, the boundary between Pacific Command and the European Command cut directly through what we now call the Central theater. With the establishment of the U.S. Central Command, the unified command structure has been changed to provide a single U.S. command with the responsibility for essentially all U.S. military activity in the region. This responsibility includes military planning, exercises involving U.S. and regional forces, deployment of forces to the region, operational command of forces in the theater, and other representational activities in the region.

One of the many advantages of having a single unified command is that the command will be able to devote its full attention to this complex, explosive and strategically vital region. Not only does the region contain three distinct geographical areas—Southwest Asia, the Arabian Peninsula and Northeast Africa—but within each of these areas there are vast differences in national wealth, innumerable historic and religious conflicts, and vast cultural differences.

The United States Central Command evolved over a period of about three years from the Rapid Deployment Joint Task Force, a command that was created in March 1980 as a temporary solution to a long-term problem. President Reagan and Secretary Weinberger saw clearly that the United States' long term needs in this vital Central area required something more permanent than a temporary Joint Task Force. It needed a permanent command, a command with geographic responsibility for the area, just as the European Command is responsible for Western Europe, and the Pacific Command the Pacific Theater.

I commanded the Rapid Deployment Joint Task Force for its last 18 months, and I can tell you that I am very proud of the good work it did in identifying our force projection problems and getting solutions identified and initiated.

As the commander in chief of a unified command less than three months old, I cannot sit here today and tell you that we've solved all the challenges facing us, and I appreciate the opportunity to address some of the issues that this subcommittee has indicated an interest in.

First, the relationship between the U.S. Readiness Command, the U.S. Central Command and the Rapid Deployment Force. As a unified commander, my relationship with the U.S. Readiness Command is similar to my relationship with other unified commands. But this is tempered by a number of realities. The first is that the U.S. Central Command is located on the same base as the U.S. Readiness Command. This means that there is considerably more contact between the two commands that might otherwise be the case. The end result is that the Readiness Command and the Central Command are probably more aware of one anothers programs and progress than any other two unified commands.

The second reality is that the U.S. Central Command is a direct descendant of the U.S. Readiness Command, so we share some of the same heritage.

But the third reality, and most important point, is that we are assigned different missions and functions. U.S. Readiness Command focuses on U.S. readiness and exercises programs for our forces in the U.S. and the reinforcement problem, while U.S. Central Command focuses on its area of responsibility of an area commander in chief.

The evolution of the Rapid Deployment Joint Task Force into the United States Central Command did *not* reduce the Rapid Deployment Force from a strong viable force to nothing. The same forces of the Army, the Navy, the Air Force and the Marines, which could have been used for rapid deployment on the 31st of December of last year, can be used in exactly the same way today!

While it is true that the Rapid Deployment Joint Task Force could have been used anywhere in the world, in fact the RDJTF headquarters, at the direction of the Joint Chiefs of Staff, was focused exclusively on Southwest Asia. This nation did not *lose* any military capability when the U.S. Central Command came into being on January first.

Next, let me turn to manpower. *No* new spaces have been created by the establishment of the U.S. Central Command. What that means is that every manpower space assigned to the U.S. Central Command came "out of the hide" of the services. The manpower document for the command, as approved by the Joint Chiefs of Staff one year ago, has actualy been reduced during the past year. In March of 1982, the Joint Chiefs approved a total of 967 manpower spaces for the new command. Early this years, we were told to reduce that figure by 121 billets, and we have complied. What this means is that the U.S. Central Command Headquarters has been reduced by 12 percent since the first of this year.

The U.S. Central Command is currently authorized a total of 846 billets. In addition, the combined manpower authorizations of the USCENTCOM component commands total 231 billets. So the bottom line is that one thousand seventy-seven billets are directly attributable to the U.S. Central Command, and not one of those is an addition to service end strength. We have grown to our current strength over the past three years as a result of major increases in responsibility.

An important point here is that the U.S. Central Command differs from the European Command and the Pacific Command in a number of important ways:

—Unlike U.S. Eurpoean Command and Pacific Command components, my components are not major service commanders, so I cannot delegate to them major logistical functions in the same way CINCPAC and USCINCEUR can.

—There is no infrastructure to support my headquarters, as we are not located in our area of responsibility. So we have a real requirement stemming from our need to deploy in the event of a crisis.

Because we are located in the United States, a forward headquarters presence for the command is desirable in my area of responsibility. If we are allowed to establish a forward headquarters element, there will be no overall increase in the size of my staff or my component headquarters. By forward presence, I do not mean a large number of troops or other military units. To the contrary, I believe it would be a mistake to try to place large numbers of forces in the Central theater at this time or for the forseeable future. What I mean is a limited presence of personnel from my headquarters to perform what is essentially a liaison function. This forward presence would be mainly for purposes of interface with friendly nations within the Central threater. I believe a unified command needs some direct interface with U.S. embassies in its geographic region and with officials of nations in the area. This is particularly true of new unified command and even more so for a command responsible for an area where there is no significant U.S. military presence.

In short, I believe a forward presence for the U.S. Central Command will go a long way towards insuring that U.S. military programs in the area are complementry to U.S. diplomatic and economic program in the region. A forward headquarters element would also provide a clear signal of U.S. resolve in the area and would work towards acceptance of the new command by nations in the region.

Before leaving this subject, I would like to address one more fact of it, and that is the idea of putting a forward element aboard a ship in the region. It is certainly possible to have a forward headquarters element aboard a U.S. Navy ship in the area. At first glance this seems quite attractive since there are no host nation agreements involved, and it could transcend political rivalries and objections to a "permanent" presence ashore.

In my judgment, a forward element afloat sends the wrong message to our friends and foes. As I have indicated, our forward element should send a clear signal of U.S. resolve in the region to help establish the credibility and acceptance of the new command in the region. Doing that from a ship is not possible! Moreover, the forward element should interface daily with host nations and U.S. agencies in the area to properly manage USCENTCOM programs. Doing this from a ship would be extremely difficult. A final argument is that force levels would have to be increased to provide a ship dedicated to this mission.

A forward headquarters element ashore provides the right kind of presence at minimum cost to the taxpayer and maximum benefit to the nation.

Mr. Chairman, I would like to address a number of areas of concern to me as commander in chief, U.S. Central Command.

The question of "How much is enough?" is one that you and your colleagues in the Congress must struggle with on a daily basis. As military commander, I see the coin from a different side, and that is "What can we do with what we have?"

Mr. Chairman, I must tell you there are two areas where the U.S. Central Command especially needs help. That help will benefit not only the U.S. Central Command but the entire nation, for these are national problems, not just Central Command problems. They relate to the fact that the Central Command's area of responsibility is over 7,000 miles from the east coast of the continental United States and occupies an area larger than the United States. They also relate to the fact that this is an area in which there has only limited U.S. military presence and an area with little in the way of communications or transportation facilities.

Probably the most pressing need we have is for more lift—airlift and sealift. Seven thousand miles one way is a long commute.

It's not a question of sealift or airlift, because we need both. We need airlift up front to move forces to the theater on short notice, and move them within the theater when they get there. The sealift is needed to move our outsized equipment and bulk cargo and to keep our forces supplied in any extended conflict. Sealift and airlift provide the cornerstone of this nation's ability to move combat forces and fight them where they're needed. The shortfalls in sealift and airlift are serious and the President's budget is a large step in the right direction towards getting this problem solved.

The U.S. Central Command also has some significant problems in the area of command and control communications. Two years ago, if you'd asked about my command and control communications, I'd have told you they were inadequate. Since that time, we've made some progress, but command and control communications still needs a great deal of attention. I need to communicate with my forces more quickly, more reliably, and more securely than I can now. And I ask your help in making it so as future programs as presented to you.

In closing, let me say for the record I believe that the U.S. Central Command represents a major step forward in the evolution of the United States military relationship with the nations of the Central area. It is a fact that the United States Central Command, and the Rapid Deployment Joint Task Force before it, have accomplished more in three years than even our staunchest advocates thought possible.

Again, I appreciate the support of this committee and particularly you, Mr. Chairman, in getting the U.S. Central Command started on 1 January 1983, and I will give my best effort to making the days ahead productive ones for the U.S. Central Command and for our friends in our area of responsibility.

I want to reiterate in closing, that in my judgment the U.S. Central Command is vital to U.S. national interests and with your continued support, we can do the job.

Thank you.

Senator COHEN. Thank you very much, General Kingston. This will be helpful in trying to lead the battle on the floor which I am sure will take place later in the year.

I have a couple of quick questions before we move on to Admiral Hunter.

You indicated that a forward deployed headquarters at sea would send the wrong signal to our allies and adversaries alike.

What did you mean by that?

General KINGSTON. Without physical presence on the ground itself, and I have limited port facilities right now—I can expect to get more later—right now we are permitted in certain countries on a very limited basis. While afloat is better than no forward presence, I think as a commander I must keep pressing for a viable forward headquarters element ashore, hopefully centrally located within the region.

As commander in chief, U.S. Central Command, I assume responsibility, of course, for the security assistance and virtually all the military presence in the region with the exception of the defense attaché.

Senator COHEN. What you are saying is if you had headquarters at sea, even if designated as temporary, that would eliminate your desired goal of having land-based headquarters?

General KINGSTON. Even if it were temporary, it would send the wrong signal to the friendly nations and potential adversaries that we are not really sincere in our effort to form a viable U.S. Central Command with appropriate liaison in the region.

Senator COHEN. I appreciate your statement on that. Some of the experiences and conversations I have had with leaders in some of those moderate Arab countries lead me to the opposite conclusion.

On the one hand, I have found most of the Arab nations that will be affected by this command don't want to see a land-based presence by the United States—they do not want to see any visible presence of United States Marines or Navy.

What I have been told they want to have is an over the horizon presence. They want to feel us but not see us.

It seems to me a proposal to have a headquarters, even agreeing it would be on a temporary basis, would be better than having a command headquarters in Florida. I mean in terms of sending a signal that you are really serious about having a command structure that is dedicated to defending that area.

It seems to me to have a 601-ship Navy would be better than having it back in Florida at Fort MacDill.

General KINGSTON. I can get into much more detail on this in closed session.

Senator COHEN. I will reserve the question then.

Admiral Hunter.

STATEMENT OF REAR ADM. CHARLES B. HUNTER, U.S. NAVY, CHIEF OF STAFF, U.S. READINESS COMMAND

Admiral HUNTER. I would like to read my prepared statement briefly.

Mr. Chairman and members of the subcommittee, it is an honor to appear here to present these views for General Starry regarding the U.S. Readiness Command [USREDCOM] and the Joint Deployment Agency [JDA].

My testimony will first describe missions and command relationships. Then I will describe some initiatives we have taken to improve readiness, deployability, and sustainability of our assigned forces, and most importantly sustainability.

Mission and Command Relationships of USREDCOM and the JDA; USREDCOM's primary mission is to provide a general reserve of combat ready forces of the U.S. Army and U.S. Air Force to reinforce or augment other unified commands—throughout the world.

Additionally, USREDCOM is responsible to provide contingency plans and command and control headquarters for the employment of forces as directed.

We are also responsible for disaster relief operations. We are charged with land defense of the continental United States [CONUS], Alaska, and Canada—in the latter case in combined operations with Canada's Forces Mobile Command.

Finally, we are responsible to provide military support to civil defense in concert with other agencies of the executive branch.

The commander in chief, Readiness Command, is also Director of the Joint Deployment Agency. Established by the Joint Chiefs of Staff [JCS] in March 1979 to improve our ability to deploy military forces to meet our worldwide commitments, the JDA is the four-Service coordinating authority for deployment planning and execution. General Baginski will talk more about this later.

We are charged with coordinating actions of the military deployment agencies to deploy forces and materiel necessary to meet the demands of U.S. military operations anywhere in the world.

The JDA is responsible for developing and operating the joint deployment system [JDS]. This system is designed to improve our deliberate planning—that which take place in advance of a crisis, and to provide a quick planning capability for actions required by crisis situations. The JDS will accelerate the development of a data file, movement tables, and schedules necessary for the execution of large-scale deployments. Very simply put, that is getting things in the right place at the right time in the correct sequence.

The U.S. Central Command [USCENTCOM], activated 1 January 1983, is also stationed at MacDill Air Force Base. The roles of USREDCOM, the JDA, and the USCENTCOM are complementary, but each has specific functions to perform that are different.

USREDCOM must plan for specific U.S. contingencies, support the plans of all the commanders in chief [CINC's] with the conventional reserve of the United States, develop joint tactics, techniques, and procedures and conduct joint exercises in the Conus.

USCENTCOM has to plan, train, deploy, and fight, if necessary, in a specific operational area. USCENTCOM's focus is on Southwest Asia, not on supporting worldwide operations of all the CINC's. If USREDCOM assigned forces were to deploy, the JDA would coordinate and monitor the deployment.

New directions of USREDCOM: Joint doctrine—there is a relative scarcity of published doctrine for joint forces operations. Joint Chiefs of Staff publications—the JCS pubs, provide broad general guidelines for the operations of joint forces.

However, in this time of increasing system and operational complexity, there is an increasing demand for more detailed doctrine for operational matters involving joint forces. While this might be provided by additional JCS publications, it is considered more appropriate that this doctrine be developed by an operational command—one charged with the actual employment of joint forces, and the training and exercising of those forces for joint operation.

JCS publications and related documents will still set forth broad doctrinal guidelines for joint forces operations, and service field and other operating manuals will still prescribe service-unique operational doctrine.

Therefore, foremost in USREDCOM's initiatives is the development of tactics, techniques, and procedures for operations unique to joint force employment, deployment, and sustainment.

Readiness Command has joined with the Air Force's Tactical Air Command [TAC] and the Army's Training and Doctrine Command [TRADOC] to develop joint tactics, techniques, and procedures for joint force operations. The Navy and Marine Corps have also been invited to participate and I might add are beginning to participate.

Joint tactical publications will be issued regarding several critical areas of joint force employment. Examples are:

1. Joint attack of the second echelon.
2. Air-land forces interface.
3. Joint air attack team.
4. Forward air controller/fire support team operations.
5. The air-ground operations system.
6. Armed Forces doctrine for chemical and biological weapons defense.

To date, four such publications have been issued to the field; the validation process has commenced via evaluation feedback from our field exercises. That is why we are the real outfit to do it.

I might tell you in my early days in the Navy I recall rolling in to do close air support for an Army unit to find they were on VHF, I was on UHF, we could not talk to each other. Now we are well past that point in progress, but we still have many things remaining so that we can effectively fight jointly in any area of the world.

Additional responsibilities of USREDCOM and JDA in this regard include:

1. Application of JCS prescribed operational concepts and procedures readying designated forces for employment, deployment, and sustainment in joint operations;
2. Development of necessary agreements or publications concerning tactics, techniques, and procedures for joint operations where no JCS-approved doctrine exists;
3. Rationalization and standardization wherever possible of joint operational concepts and procedures using whatever prescription seems most appropriate; and
4. Development of joint doctrine appropriate for recommendation to the JCS for revision or publication as JCS prescribed procedures relative to joint forces employment, deployment, and sustainment. This includes, but is not limited to, indications and warning, intelligence, command and control, and the joint deployment system.

Joint war gaming and simulation: As an adjunct to our planning for employment, deployment, and sustainment of joint forces, we have initiated a joint war gaming and simulations program. The goals of our program are:

To develop a theater-level simulation, using existing battle models, to analyze employment, deployment, and sustainment options in contingency situations;

To refine the development and evaluation of joint concepts; and

To support simulation requirements of the joint readiness exercise program.

Among the end products will be better planning capability, better exercise capability, reduced turbulence in overexercised units, and better prepared combat forces—all at reduced costs—to improve joint force effectiveness.

We are working with the Naval Postgraduate School of Monterey, Calif., and the Jet Propulsion Laboratory at Pasadena to build this capability.

Our ultimate goal is to model all aspects of joint force employment, deployment, and sustainment, then embed this simulation and analysis capability into the day-to-day functioning of the staffs of USREDCOM and its components. We will also offer this capability to other CINC's worldwide.

USREDCOM joint readiness exercise program: To assure combat readiness of all assigned forces, we have designed an exercise program for fiscal year 1983 comprised of two exercises in the continental United States and one exercise outside the continental United States.

These exercises are designed to examine specific joint strategic concepts and to exercise joint systems of warfare in execution of those concepts. Exercises are developed to include service and unit training requirements when consistent with accomplishment of joint objectives.

We are making a greater effort toward profiting from other unified command exercises by eliminating—eliminating is a big word—lessening duplication of exercise objectives, overcommitment of limited forces, and by a more comprehensive exercise evaluation system.

Summary: USREDCOM is the only common denominator between the services and other unified commands in its role of providing general purpose combat-ready forces to commanders tasked to fight the war.

Developing joint tactical procedures, training, and exercising forces in these joint tactical procedures may be key to fighting and winning the next war. The missions described herein are therefore unique. No other command is so tasked. Therein lies the reason-to-be for the U.S. Readiness Command.

[The prepared statement of Adm. C. B. Hunter follows:]

PREPARED STATEMENT BY REAR ADM. C. B. HUNTER, U.S. NAVY, CHIEF OF STAFF, U.S. READINESS COMMAND

Mr. Chairman and members of the subcommittee, it is an honor to appear here to testify regarding the United States Readiness Command (USREDCOM) and the Joint Deployment Agency (JDA). My testimony will first describe missions and command relationships. Then I will describe some initiatives we have taken to improve readiness, deployability and sustainability of our assigned forces.

MISSION AND COMMAND RELATIONSHIPS OF USREDCOM AND THE JDA

USREDCOM's primary mission is to provide a general reserve of combat ready forces of the U.S. Army and U.S. Air Force to reinforce or augment other unified commands—throughout the world. Additionally, USREDCOM is responsible to provide contingency plans and command and control headquarters for the employment of forces as directed. We are also responsible for disaster relief operations. We are charged with land defense of the continental United States (CONUS), Alaska and

Canada—in the latter case in combined operations with Canada's Forces Mobile Command. Finally, we are responsible to provide military support to civil defense in concert with other agencies of the Executive Branch.

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NEW DIRECTIONS FOR USREDCOM

Joint doctrine.—There is a relative scarcity of published doctrine for joint forces operations. Joint Chiefs of Staff publications—the JCS Pubs, provide broad general guidelines for the operations of joint forces. However, in this time of increasing system and operational complexity, there is an increasing demand for more detailed doctrine for operational matters involving joint forces. While this might be provided by additional JCS publications, it is considered more appropriate that this doctrine be developed by an operational command—one charged with the actual employment of joint forces, and the training and exercising of those forces for joint operation. JCS publications and related documents will still set forth broad doctrinal guidelines for joint forces operations, and Service field and other operating manuals will still prescribe Service-unique operational doctrine. Therefore, foremost in USREDCOM's initiatives is the development of tactics, techniques and procedures for operations unique to joint force employment, deployment and sustainment. Readiness Command has joined with the Air Force's Tactical Air Command (TAC) and the Army's Training and Doctrine Command (TRADOC) to develop joint tactics, techniques and procedures for joint force operations. The Navy and Marine Corps have also been invited to participate. Joint tactical publications will be issued regarding several critical areas of joint force employment. Examples are:

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To date, four such publications have been issued to the field; the validation process has commenced via evaluation feedback from our field exercises.

Additional responsibilities of USREDCOM and JDA in this regard include: (1) application of JCS-prescribed operational concepts and procedures readying designated forces for employment, deployment and sustainment in joint operations; (2) development of necessary agreements or publications concerning tactics, techniques and procedures for joint operations where no JCS-approved doctrine exists; (3) rationalization and standardization wherever possible of joint operational concepts and procedures using whatever proscription seems most appropriate; and, (4) development of joint doctrine appropriate for recommendation to the JCS for revision or publication as JCS prescribed procedures relative to joint forces employment, deployment and sustainment. This includes, but is not limited to, indications and warning, intelligence, command and control and the JDS.

Joint wargaming and simulation.—As an adjunct to our planning for employment, deployment and sustainment of joint forces, we have initiated a Joint Wargaming and Simulations Program. The goals of our program are to develop a theater-level simulation, using existing battle models, to analyze employment, deployment and sustainment options in contingency situations; to refine the development and evaluation of joint concepts; and to support simulation requirements of the Joint Readiness Exercise Program. Among the end products will be better planning capability, better exercise capability, reduced turbulence in over-exercised units and better prepared combat forces—all at reduced costs—to improve joint force effectiveness. We are working with the Naval Postgraduate School at Monterey, California, and the Jet Propulsion Laboratory at Pasadena to build this capability. Our ultimate goal is to model all aspects of joint force employment, deployment and sustainment, then embed this simulation and analysis capability into the day-to-day functioning of the staffs of USREDCOM and its components. We will also offer this capability to other CINCs worldwide.

USREDCOM JOINT READINESS EXERCISE PROGRAM

To assure combat readiness of all assigned forces, we have designed an exercise program for fiscal year 1983 comprised of two exercises in the continental United States and one exercise outside the continental United States. These exercises are designed to examine specific joint strategic concepts and to exercise joint systems of warfare in execution of those concepts. Exercises are developed to include Service and unit training requirements when consistent with accomplishment of joint objectives. We are making a greater effort toward profiting from other unified command exercises by eliminating duplication of exercise objectives, over commitment of limited forces and by a more comprehensive exercise evaluation system.

SUMMARY

USREDCOM is the only common denominator between the Services and other unified commands in its role of providing general purpose combat-ready forces to commanders tasked to fight the war. Developing joint tactical procedures, training and exercising forces in these joint tactical procedures may be key to fighting and winning the next war. The missions described herein are therefore unique. No other command is so tasked. Therein lies the reason-to-be for the United States Readiness Command.

Senator COHEN. Thank you very much, Admiral.

Before proceeding I have an apology to make, both to the Army and the Air Force. I said Fort MacDill. I apologize to the Army as well as the Air Force on that.

General Klein.

STATEMENT OF BRIG. GEN. WILLIAM E. KLEIN, U.S. ARMY, ASSISTANT DEPUTY DIRECTOR FOR FORCE DEVELOPMENT AND STRATEGIC PLANS, ORGANIZATION OF THE JOINT CHIEFS OF STAFF

General KLEIN. There is something about being last, Mr. Chairman, when you are supposed to wrap it up and everyone has said what you have in mind.

I am pleased to represent General Vessey and the Joint Chiefs of Staff. I have a classified statement which I would like to submit for the record. I will just try to summarize that in an unclassified vein in this forum.

[The prepared statement of General Klein is classified and retained in committee files.]

General KLEIN. As to my background, I think it is rather interesting, Mr. Chairman, that I was the executive officer to the commander in chief of the old Strike Command which was the forerunner of both the Readiness Command and Central Command in some form and after that I was also assigned to the U.S. Readiness Command in their J-5 Policy and Planning Division in the midseventies.

I returned under the auspices of that command to the 18th Airborne Corps where I was Chief of Staff in 1979 and in 1980 when we first organized the rapid deployment forces and that also made me Chief of Staff of the headquarters of the Army's rapid deployment forces.

Then as my last assignment I was assistant division commander of the 82d Airborne Division which is one of General Kingston's key divisions.

So, I have experienced firsthand the rapid deployment forces and have seen the concept grow from several different aspects.

In the last 10 months I have been deeply involved in the unified command plan with the Joint Chiefs of Staff and all the decisions that have been made on the Central Command and also on the missions of the Readiness Command.

I would like to emphasize, and I think it has been well said today, but I want to underscore it, there is no overlap between the two headquarters, Readiness Command and Central Command.

I think it is important to understand also that the forces for the RDJTF and later USCENTCOM have always come from a pool of rapidly deployable forces from all four services. They have always been available for contingencies worldwide, depending on the global situation.

So, I would like to immediately now go into a discussion of the Congressional Budget Office study because I know that you are deeply concerned about the impact on NATO and other theaters should a large commitment of forces be required for Southwest Asia.

I have reviewed the Congressional Budget Office study and I agree with Dr. Blaker that it could mislead readers that there is a commitment of forces to CINCCENT which automatically reduces the force levels for the defense of Europe. I think that lends then to the idea that it would also increase the risk of a successful NATO defense.

Here I would like to emphasize that rapid deployment forces is a concept. There are no major forces absolutely committed to CINCCENT. That is scenario dependent. And at any time I believe that the Joint Chiefs of Staff would make recommendations to the national command authorities and they would decide, depending on the scenario, whether or not certain forces did indeed go to CINCCENT.

Senator COHEN. Let me give you a couple of hypotheticals.

General KLEIN. All right, sir.

Senator COHEN. Originally the predication of the deployment of the rapid deployable forces was that we had to defend against a Russian Soviet invasion into Iran and what would be required in the way of forces deployed to that region to help defend against that.

Would such a scenario put the NATO forces at risk in terms of the troops that are currently planned for reinforcement of Europe? Would that diminish in capacity and capability?

General KLEIN. I believe that probably the most damaging part of that particular scenario, depending on the timing, would be the sustainability of the forces in Southwest Asia. If the timing were right, you could actually reinforce NATO because you would have already had those divisions out in the area of Southwest Asia before the NATO attack began, depending on the time of your scenario.

So, the problem would be, in that particular scenario, sustainment of the forces in Southwest Asia. Should war break out in NATO, then I believe that it becomes obvious, depending on how involved we were in Southwest Asia that we would probably try to extract ourselves from that scenario.

Senator COHEN. Let me go one step further.

On the one hand, if you just predicate it on a one-conflict scenario, you would have certain plans and contingencies to take into account. Then you double it, assuming that the Soviets would not simply move into Iran without at least causing some diversionary tactic, if not an outright invasion on the central front.

There would be some activity over there. They would not move in just one direction. They would move in at least two, if not three, at that point. You factor that in, don't you?

General KLEIN. We factor that in. I think that with our increased intelligence capabilities that we would be able I believe to provide pretty sound recommendations to the National Command Authorities before we committed ourselves to Southwest Asia.

Senator COHEN. Suppose there is a buildup in Afghanistan and they start to expand their air base activity. They have quite a base going now, but what if they started to mobilize in Afghanistan with approximately 130,000 troops and we see and increased activity in Afghanistan.

Then we see the forces going into a higher state of readiness in Eastern Europe. Assuming you have a few days' notice on that, which is not a lot of time—let us give you 10 days' notice, maybe not even that long—do you mean to say you would not be constrained. You would have the ability to deploy the necessary number of troops, materiel, and equipment into the Southwest Asia region, and at the same time still have enough left over to then deploy to reinforce NATO?

General KLEIN. May I reserve this question which is a pertinent one until the closed session?

Senator COHEN. You raised the question about the CBO study which very basically says that if a larger RDF were drawn into Southwest Asia and a conflict brought out in Europe, the United States would be unable to sustain the current level to NATO.

The question is: Do you agree with that statement? The answer is: No, not necessarily.

I guess I am trying to get the "not necessarily" qualified and I will reserve that for the closed session.

General KLEIN. If you would please.

Senator COHEN. Why don't you complete your statement?

General KLEIN. To continue, my point here is that specifically we do not commit forces to USCINCCENT or to any CINC for that matter. None of those commitments is automatic. Therefore, in our opinion the risk to NATO is scenario dependent and we would have to examine it. I will be happy to discuss that further with you in closed session.

I would also be very candid to say it would be extremely difficult to redeploy forces once committed, from Southwest Asia into Europe, and we are fully aware of that problem.

Senator COHEN. One of the problems we have is a fairly perilous course to walk on. On the one hand, you may recall the difficulty the committee had trying to get a separate unified command established. There was considerable opposition from the Pentagon, the Joint Chiefs at that time.

Now we have opposition, at least some opposition, from the Congress in trying to persuade them of the wisdom of having this separate command to prepare for this kind of contingency.

I am always intrigued by the notion that we tend to divide almost along party lines. On the one hand, there are those who want to see a substantial reduction in the defense budget, and this gets to your support, General Kingston, thank you for support to do this kind of thing.

There are those who would like to deeply cut into the defense budget saying we don't really need the 9 or 10 percent, let us have 4, but don't cut conventional war-fighting capability because we want to beef up the conventional side. Well, this is the conventional side.

Don't cut ammunition and resupplies. Yet, when you start focusing on the specifics, it means more airlift and more sealift.

Now we see more articles being written saying you can cut back on the C–5 and let us cancel some of these ships. It does not deal with the reality.

Do you want to have this capability? Do we need it and are we willing to pay for it?

Everybody says yes in the abstract. When it comes down to funding, they are not about to do it. It does not appear they are ready to do it.

General KLEIN. I understand it is a tough question. I would only add to that that you have given us increased flexibility and the chairman on several occasions has stated that that increased flexibility has improved the overall stance of the armed forces and that that airlift is not only needed for Southwest Asia, but it is also needed for NATO because we do not get our forces into NATO as fast as we would like to even in a NATO-only scenario.

Senator COHEN. The CBO study indicated we need $5.8 billion more in assets to be dedicated to airlift, sealift or mobility requirements in order to meet the kind of commitment we are undertaking. That has to be pointed out.

General KLEIN. Yes, sir.

I should also like to address the issue of the geographic boundaries of the U.S. Central Command.

The Joint Chiefs have just completed a comprehensive review of the Unified Command plan which, of course, is our authoritative document for assigning functions and areas of responsibility to the commanders of our unified and specified commands.

The geographic area of responsibility of USCENTCOM was one of several issues examined during this review. While the results of the review have not been promulgated outside of military channels I can tell you that no decision has been taken to change USCENTCOM's assigned area.

With regard to the assigning water areas, there is a proposal to expand the USCENTCOM area of responsibility to add a portion of the Indian Ocean, but no decision has been made to date on that proposal.

The proposal which impacts on command and control of the naval forces in the region is one of the issues that will be reviewed by the Secretary of Defense in the near future.

Mr. Chairman, there is a good deal of logic on the other hand for retaining the present maritime area command arrangement. Unity of command is essential to the conduct of the complex naval operations in an area as large as the Indian Ocean. This unity of command is preserved under CINCPAC. It enhances the command and control and responsiveness of the naval forces in the Indian Ocean as well as protection and control of the sealanes of communication which are CINCPAC's responsibilities.

PACOM is also well established and functioning in the area and has established a very substantial reservior of operational experience there.

The current command arrangements have also demonstrated that supportability of naval operations in this theater without substantial modification, that is, the way the arrangements are now, will allow us not to have to build an expensive naval logistics infrastructure for a Central Command fleet which we cannot afford.

In summary, by designating the task force (CTF 70) currently in the Indian Ocean under CINCPAC's operational command as commander of supporting naval forces to support USCINCCENT, the vital command and control link is maintained to insure the National Command Authorities of full and responsive support to USCENTCOM in the event of hostilities.

This is the same arrangement that CINCEUR has with the exception of the Mediterranean which is a special case and I can discuss it further with you. I will be happy to discuss this further in closed session.

Senator COHEN. Thank you very much.

General KLEIN. A final comment on focus of our planning in Southwest Asia is appropriate.

Southwest Asia contingency planning is largely focused on worst case scenarios involving a major Soviet invasion into the region. However, in the recent past there has been a significant shift, the planning for a lesser case interregional scenario.

For example, assisting Saudi Arabia against regional threats. We have been able to take on the burden of planning for wider range of scenarios as USCENTCOM's headquarters staff has matured and our expertise in the region has improved.

In closing, I would like to wholeheartedly support both the comments of Dr. Blaker and General Kingston on the importance of gaining your support for the President's program, especially as it pertains to our ability to provide forces rapidly to General Kingston or other CINCS for the operation required to protect U.S. security.

Senator COHEN. Thank you very much, General Klein. I particularly appreciate the latter part of your comment because this has been an evolutionary process from the original declaration creating the rapid deployment force and RJDTF.

From the very beginning we were trying to say what is the worst case you are planning for. That was the Soviet invasion. That was the worst case scenario, but not the most probable type contingency we have to deal with in that part of the world.

The assumption is if you are prepared for the worst, you can handle anything lesser. We didn't think that was the case. Rather you should take that worst case scenario into account, but nonetheless look at the political reality taking place in that part of the region and try perhaps to deal with those contingencies rather than planning for the worst and shaping this particular force for that part of the world.

I am going to have to declare another very brief recess. I will be right back.

We will stand in recess for about 10 minutes.

[Recess.]

Senator COHEN. General Baginski, I understand you do not have a prepared opening statement?

STATEMENT OF MAJ. GEN. JAMES I. BAGINSKI, U.S. AIR FORCE, DIRECTOR, DEPLOYMENT DIRECTORATE, JOINT DEPLOYMENT AGENCY

General BAGINSKI. No; I do not.

Senator COHEN. Will you be prepared to answer questions concerning the Transportation Command?

General BAGINSKI. Yes, sir.

Senator COHEN. What are the views of the Readiness Command on the proposed establishment of the military Transportation Command? What does REDCOM think about this?

General BAGINSKI. They are in support of the consolidation and military integration, more importantly General Starry, the Director of the Joint Deployment Agency, is responsible for deploying those forces. What that integration would do is speed up the planning process.

Right now we do sequential planning as far as the close schedules are concerned. We have a refinement conference where we take CINC requirements and turn them into specific units to determine the transportation requirements, those that go by air, go into the Military Airlift Command and they in turn come back with airlift schedules which are put into the data base to maintain as an executable OPLAN.

As far as the surface transportation, those forces that are moving from origin to POE, that is the ship POE, are then flowed by the command to the embarkation. That has to be completed before it goes in the Military Sea Command and those in turn are in the ship schedules.

With the integration of those two commands we would have one surface command and instead of doing sequential planning they in turn could do it all at one time from origin to the port of debarkation.

Right now the Military Sealift Command is long pull because they don't pick their requirements from the management command until after they finish flowing from the origin to shipboard debarkation.

It will also allow the modeling of the rail and transportation, land transportation system into one model that would flow it from origin to the port of embarkation as well as building into that same model ship characteristic and port characteristic to include the throughput because the throughput capability is another responsibility of the Military Traffic Management Command.

Put the two together and you solve the surface transportation problem all within one house. It would have visibility over the in-transit cargo as well.

Senator COHEN. Last year the House Armed Services Committee opposed this particular consolidation. My understanding now is that you are seeking to remove that particular legislative opposition, prohibition to the consolidation.

RELATIONSHIP BETWEEN TRANSPORT COMMAND AND JOINT DEPLOYMENT AGENCY

What would be the relationship between the military Transportation Command and Joint Deployment Agency and speak more slowly because I will have to read the transcript to find out what you said.

General BAGINSKI. I will be happy to go through it.

Senator COHEN. Take it through the steps so that I will have better understanding of how these commands are being integrated.

I think you made a case initially for consolidation. I want you to take me through it again.

General BAGINSKI. All right, sir.

As an agency of the Joint Chiefs of Staff we take the CINC's OPLAN and he comes back and says I want an airborne unit or mechanized division or whatever happens to be his requirement in order to fight his war.

We turn those around into specific units. Right through there are what we call unit type codes. I want a unit of this type. We in turn, through the Readiness Command who has to provide the forces, get together with the forces command in Georgia as well as the Tactical Air Command at Langley and identify specific units so that we have real people and real things to move.

That determines the transportation requirement depending on the CINC's requirement for closure date, in other words, when he wants that unit to arrive within the theater to determine whether it goes by air or whether it goes by surface.

Those requirements that go by air, once we have identified a specific requirement rather than notional requirement, are passed to the Military Airlift Command and they run it through their model program that they have at Scott called the Flow Gen. It is a software program that schedules the units to move by air in order to meet that closure date.

Those schedules are inputted into the data base that we maintain current at the Joint Deployment Agency. Those requirements that are going by surface first have to be scheduled by Military Traffic Management Command from their origin to their port of embarkation.

Before the Military Sealift Command can build a flow schedule they have to wait until the Military Traffic Management Command completes their movement from origin to POE. Then in turn they schedule the ship in order to pick that cargo up and take it to the port of debarkation.

We generally do that through a phase refinement conference. We determine transportation shortfalls where the model throws out units because they lack the adequate load size or adequate requirement to fill up a whole airplane or fill up a whole ship. Then we resolve those.

The consolidation of the two commands, as I said previously, would allow that surface transportation to be done with one model and one data automation system by including not only the ship characteristics and port characteristics, that is the depth of the channel the vessel can take, but also the throughput capability that we can out load through the port of debarkation and also clear the port at the port of debarkation and that can be done with one modeling.

Right now it is done through two models.

Senator Cohen. Staff was just indicating to me that in the event you had a change in the priority of those items having to be moved with the two separate commands you have now, you would have a good deal of difficulty whereas you would have an expedited process with a single command.

General Baginski. Yes, sir, that is true.

By having it in one command when you make a change, then you won't have to wait for the Land Transportation Command to schedule it into the port of embarkation. You could do it simultaneously with flexibility as the CINC changes his requirements, depending on the situation as defined when he goes to employ the forces.

Senator Cohen. Admiral Hunter, could you give me a more specific statement about the relationship between REDCOM and the deployable forces?

Admiral Hunter. Yes, sir.

Rapidly deployable forces is the correct terminology. RDF is not the correct terminology in my sense of the term. The USREDCOM commands the U.S. based general purpose Army and Air Forces. It will deliver them after having been responsible for their training, organization, et cetera, to any CINC who requires them, depending on the scenario at the time.

It is really that simple. These forces are the general purpose forces in the continental United States basically. As I am sure you know, many of the units have multiple taskings, if I may use that term, and they would certainly not be able to go three places at one time, but they would go where the National Command Authorities decided that the priorities were high.

General Starry is responsible for them until they are chopped to the supported CINC's.

Senator Cohen. To whom do the services' rapidly deployable forces headquarters report? How does that work.

Admiral Hunter. They report within their own service structure. They also report to General Starry. We have daily inputs as to their readinesss status. We know how many people they have, what their equipment status is.

We exercise them, as I mentioned, three times in the upcoming year, twice in Conus and once outside of Conus. While General

Starry commands them in Conus he is also responsible for deploying them. They are also commanded right down the line through their service structure down to the platoon commander, for example.

General **Klein**. May I amplify on that?

In our Readiness Command, of course, there are about 10 Army divisions in the United States. They are trained by their services. There is a similar number of wings. I don't know the exact number. They are trained by the Air Force.

But they are training jointly. For example, they provide close air support where the Army and Air Force get together and practice deploying forces in exercises by having airborne troops, et cetera.

Those kinds of functions are supervised by Readiness Command. That is his responsibility, training joint forces assigned. All those forces are assigned.

The strategic reserve of our Army and Air Forces all belong to REDCOM. He exercises them, trains them in joint exercises. Then should a contingency break out, should war break out, he is responsible, using the Joint Deployment Agency and MAC and all the assets available to him, to take those forces and move them whenever they need to go.

At some point in time at some parallel on the map they are chopped from CINCRED to another unified commander, for example to CINCEUR if they are going to Europe. But CINCRED is responsible for the training. Here I think we have problems because a lot of those forces are dual-based forces that belong to General Rogers, but CINCRED is still responsible for their joint training.

Again, CINCRED's forces exercise with General Kingston, the 82d Airborne, 101st, but CINCRED is still responsible for their training. General Kingston obviously is very interested that those particular forces that are assigned to him for planning be trained for his area of operation and he has a memorandum of agreement with General Starry, CINCRED, where he conducts exercises with him and supervises in a sense some of the training of those forces to make sure that their contingency planning is as he desires for the CENTCOM.

Senator **Cohen**. What areas of the world are not assigned to a unified command and what is the nature of the relationship of REDCOM to those areas?

General **Klein**. I think I can make that clearer if you will let me address that in closed session because the Chiefs have just looked, as I mentioned in my statement, at the entire world, the Unified Command Plan. I might enlighten you in closed session a bit on that.

Senator **Cohen**. I have a couple of questions in open session.

ENLARGING RAPID DEPLOYMENT FORCE

Do you intend to increase the size of the rapid deployable forces in the near future?

General **Klein**. No.

Senator **Cohen**. Would the pool of forces be put into this category of rapidly deployable forces within the next 5 years?

General **Klein**. As you know, in the 5-year defense plan we intend to increase the number of divisions. I should state those are divisions in being. We are not going to add new divisions in the force.

What we will be adding will be the sustainability of the forces for those divisions and we will do the same thing with those two divisions that we have done with some of the other divisions and that is enhance their deployability.

Senator **Cohen**. You say you are going to take the same number of people you have basically and reconfigure it and, therefore, are now more rapidly deployable than you were in the past?

General **Klein**. That is correct.

Senator **Cohen**. Again that is contingent on whether or not we have the assets to make them rapidly deployable?

General **Klein**. That is also correct.

Dr. **Blaker**. I want to mention that I believe that we have some programs underway to expand the support structure. Some of those programs, which are dedicated to expanding support forces, particularly the Army, generate primarily from the Southwest Asian contingencies.

Senator **Cohen**. CBO indicated we had an unfulfilled requirement of support personnel of about 43,000.

Do you agree with that figure?

General **Klein**. That is about correct.

Dr. **Blaker**. We don't intend to increase the number of combat forces.

General **Klein**. I should say where those forces are going to be employed they are going to need that support. If we intend to use those forces in Europe, we are also going to have to have that support.

If we intend to use those forces in Korea, we are also going to need that support. There is a severe shortfall, particularly on the Army side of the fence, in combat service support units. A lot of our units are in the Reserve Forces and we are trying to upgrade that.

Senator **Cohen**. Thank you, gentlemen.

I am going to declare that we go into executive session now in order to take classified testimony. The staff will see to it that those who are not cleared for this session will leave the room.

[Whereupon, at 3:40 p.m., the subcommittee proceeded in executive session.]

EXECUTIVE SESSION

Senator **Cohen**. Gentlemen, if we could perhaps focus on three major areas that we touched on briefly in the open session, namely the nature of the forward headquarters. Dr. Blaker, you might be in a position to enlighten us a bit further on that.

Second, with respect to geographical boundaries, what the future holds in terms of expanding that, perhaps discuss why [deleted] are not included in that, and finally, what deployment in the Southwest Asia region means in terms of its impact on the NATO situation.

FORWARD HEADQUARTERS

Dr. **Blaker**. Let me start with the forward headquarters element. On December 2, 1982, when the President approved the Secretary of Defense's request that USCENTCOM be formally established. [Deleted.]

We approached this in two ways. We wanted to find out what were the best locations from strictly a military standpoint, and, from the State Department's standpoint, [deleted].

The first step was to query [deleted.]

This was done in December. The responses that we got from them were indepth and in all cases very well considered. They commented on what the thought [deleted] to the establishment of a forward headquarters in another nation.

For the most part, the responses were as you might expect them to be. [Deleted] the establishment of a forward headquarters. [Deleted.]

Perhaps our State Department representative could go into greater detail on the responses.

In any event, we took those responses as essential input to the analysis. But, I have to confess that most of the analytic effort that was done in assessing where and how to establish a forward headquarters was based on sorting out the requirements from a military standpoint. We ended up with about 13 or 14 criteria that military experts had indicated as the things that should be met regarding the location of the headquarters. All of these criteria tended to focus the most desirable location [deleted]. In large part that was generated, I think, from the type of contingencies that the USCENTCOM commander is likely to face and, if it happened, the most demanding scenario.

[Deleted.]

[Deleted.] This proposal has not yet been formally approved by the President.

[Deleted.]

I might add that I have tried to be very candid and frank about this. Obviously, [deleted] that, I think, would be highly undesirable.

Senator **Cohen**. If they read about it in the New York Times?

Dr. **Blaker**. That would be undesirable.

General **Kingston**. Mr. Chairman, I might add that would be extremely undesirable. You may recall we already had one exercise postponed 3 weeks because of an account in the Washington Post.

The point that I want to make in this session about the forward headquarters element is that if we are accepted in the area, that acceptance gives notification not only to this country but to the other countries that they are willing to have and cooperate and work with U.S. Central Command. That is one of my reasons for so doing.

Again, it adds credibility to the command. The requirement that I would place on that forward headquarters or a forward liaison chief, I am not hung up on terminology, that he must interface not only with the host nation, the host nation military and the Embassy in that area, but he has to have access to and frequently travel to other friendly nations in the area. He can do that a lot better, I believe, from a country using either commercial or U.S. dedicated air which I intend to give him.

The daily interface with the U.S. Embassies and the host nations' military and informational services, we might add U.S. AID personnel as well, these are the types of functions that a headquarters would do.

Also, I would [deleted].

Senator COHEN. Do you think that would be a sizable presence?

General KINGSTON. It [deleted].

Senator COHEN. What about Bahrain?

General KINGSTON. [Deleted.]

Senator COHEN. I assume that would have to be done with [deleted] approval?

General KINGSTON. [Deleted.]

Senator COHEN. The same with [deleted]. You are looking at [deleted].

General KINGSTON. [Deleted.]

I have met personally with the military heads of five nations, with the heads of state of four of the nations, and with all except one [deleted].

Senator COHEN. Let me come back to the question, to the extent you don't get [deleted] approval, I would assume [deleted] would never allow it to be placed on its own territory in the foreseeable future and, second, if they do not give approval for [deleted] would you still end up with a headquarters at MacDill Air Force Base as opposed to having some sort of sea-based presence?

General KINGSTON. The main headquarters has always been envisioned staying at MacDill because that is near to where my component forces are located.

Senator COHEN. I am talking about having forward deployed at sea capability.

General KINGSTON. I would rather have it at sea than no presence at all.

Again, the Navy has told me to do that, it would require an additional ship.

Senator COHEN. We can get another frigate out of Bath to help you.

Admiral HUNTER. You just don't put it out there for 10 years or 6 years. It would have to come in for overhaul, things of that sort. I cannot speak for the Navy. I am just offering something here. You may want to have some support vessels for it. I don't know.

Senator COHEN. It seems to me if you are talking about keeping a low profile, then by having that ship as a part of the forces currently deployed in the Indian Ocean itself, I guess you are keeping a pretty low profile. We do have an existing relationship with [deleted].

The addition of another ship or several ships rotating would not create a great deal of visibility in terms of profile. We are less likely to have visibility with a ship than we are with a short presence.

General KINGSTON. Under the current arrangement since January 1 when I became a unified commander my naval component commander is located in Hawaii, collated with CINCPAC Fleet.

The Commander of the Middle East Force operates out of Bahrain in the Persian Gulf. They report to my naval component.

Senator COHEN. What about the areas that are not under the unified command, what is the REDCOM relationship?

General KLEIN. I will try that one, sir.

Senator COHEN. All right.

UNIFIED COMMAND PLAN

General KLEIN. The Joint Chiefs of Staff again have just recently gone over the Unified Command plan and, frankly, they have stepped up to some very tough problems.

One of the things that they tried to do in the new command plan is assign every strategic area. So, if that is approved by the Secretary of Defense and the President, I believe that you will find most of the areas of the world will be assigned to some command.

To get back to your question, what areas are unassigned now for which REDCOM might have responsibility or does have responsibility under the current Unified Command plan, [deleted] is unassigned and in my opinion the largest problem that they might encounter.

Dr. BLAKER. Senator, I have a map of the current boundaries if you would like to have that.

Senator COHEN. Yes, that would be helpful.

General KLEIN. There are no special arrangements in the Unified Command plan with [deleted].

Senator COHEN. REDCOM would have that [deleted].

General KLEIN. He would have all of [deleted].

Senator COHEN. Let me ask you about some of the countries that were excluded from CENTCOM. [Deleted.]

What were the reasons for the exclusion of those countries?

Dr. BLAKER. If I may, I would like to comment on the exclusion of [deleted].

They are excluded from the area of USCENTCOM's responsibility. [Deleted.] There are really two reasons for this allocation. The first is strategic. The second is practical.

[Deleted.]

It stems primarily from the difficulty that we would have in maintaining supplies and communications to [deleted].

If that transpired, we would want, and hope to gain, access for using our forces from airfields. [Deleted.]

We don't expect to be able to operate from [deleted] territory, but in the event of this kind of contingency, [deleted]. As such, it would become the primary responsibility of the [deleted] commander to neutralize. [Deleted.]

Now, there are some practical reasons, too. General Kingston, as the USCINCCOM Commander, will take over security assistance responsibilities on October 1 for his area, that is, for the countries that we currently hold the USCENTCOM area. That means he has to have almost daily contact through some mechanism with many of the countries in this area. [Deleted.]

The important thing on this, I think, is that we do not hold these boundaries immutable. They are under review and they will be subject to review in the future. When the circumstances change, we can change those boundaries. There are some strategic reasons why ultimately we might want to include other countries in the USCENTCOM area of responsibility.

Senator **Cohen**. Jordan is included in CENTCOM?

Dr. **Blaker**. Yes, sir.

Senator **Cohen**. Are there any plans within your 13 criteria [deleted]?

Dr. **Blaker**. [Deleted.]

Senator **Cohen**. Could you submit to the committee for the record the kind of criteria you are looking at?

Dr. **Blaker**. Yes, sir.

[The information follows:]

Criteria for Locating a Forward Headquarters Element in SWA

The major criteria for selecting a site for a forward headquarters element in Southwest Asia include the following:

[Deleted.]

Senator **Cohen**. I can't recall, General Kingston, maybe you were the one who indicated that you needed more funds perhaps for command and control assets?

General **Kingston**. Yes, sir.

Senator **Cohen**. This hearing is not designed to deal with equipment and that sort of thing, but it would be helpful for me to know what you are looking for.

DEFENSE COMMUNICATION AGENCY

General **Kingston**. Yes, sir. Currently the Defense Communications Agency structure, infrastructure throughout Europe, is redundant, it has been in place and it has grown with the European Command since World War II.

[Deleted.]

In the Pacific area, they have a fairly sensitive one [deleted]. It is called the backbone communications system of the Defense Communications Agency. This give the capability for massive amounts of hard copy traffic, [deleted] normal communication with satellite plus long land lines coming through Europe, the terrestrial system.

[Deleted.]

It would be much better for a deployable command to operate in peacetime, and if we had to go to crisis or war, [deleted].

I am supported by the joint communication support element, a JCS communication element, that gives me tactical and field communication, [deleted].

A good example of the type of communications I am talking about, Mr. Chairman, is that yesterday we just completed a large command post exercise, Gallant Knight, at Fort Bragg. I was operating my aircraft [deleted].

We need the air tasking order and all the other things that support a dispersed command. That is the type of communications I am talking about, Mr. Chairman.

Senator **Cohen**. Gentleman, thank you very much. If I can impose on you one more time. I have to catch this vote and I will come back. I have a couple of remaining questions concerning force structure and numbers. I will be right back.

The committee will be in recess for about 10 minutes.

[Recess.]

Senator COHEN. The committee will resume.

DEPLOYMENT OF TROOPS IN SOUTHWEST ASIA REGION

Gentlemen, I think the last general question is to explore the issue of what happens to the deployment of troops in the Southwest Asia region.

Before I do that I think I left out a geographical boundary, the northwest quadrant of the Indian Ocean all the way down though to Diego Garcia.

General KLEIN. As I indicated, both in my classified and unclassified statements, that is still under deliberation by the Chiefs. As it now stands, the Unified Command plan will go the Secretary of Defense for a final decision.

I might comment on that. [Deleted] not assigning that water area [deleted].

Now, you have to understand that in that water area the carrier battle groups that are there are primarily focused on the Navy problems that they are going to encounter, [deleted]. They have to keep the sealanes open.

A lot of their attention is going to be focused on the Sloc. It is more easily focused throughout the Indian Ocean by having [deleted].

Now, the question you might raise is, if they are wandering off fighting submarines and surface combatants, [deleted] and that is a fair question. I will state to you there are several ways to do this. [Deleted] and he can make certain arrangements. One of the arrangements that has been made before would be to take one or two attack squadrons off the carrier and base those ashore and be completely in support of General Kingston's operation.

This has been done before. I would go back and say that at this point in time it is felt that [deleted].

Senator COHEN. General Kingston, do you agree with that assessment [deleted].

General KINGSTON. Mr. Chairman, I would like to make one correction in the statement.

Forces operating in the Persian Gulf or operating in the Red Sea would be under [deleted].

As far as my making a statement at this time, Mr. Chairman, as General Klein has stated, the JCS have not completed their deliberations on this subject. My opinion was sought and readily given, both my personal and professional opinions.

At this time I would like to ask your indulgence because if I disclose at this hearing what that recommendation was, I really believe I would be doing a disservice to the man I work for, General Vessey, who has asked me as a commander to tell him my thoughts. I think it would skewer the JCS way of doing business.

Had this question been asked before the deliberation or afterward, of course you would know how they feel. I think it would be within proper procedure to do that. At this time I would like to decline to answer that question.

Senator COHEN. General, I don't want to put you at odds with your superior, General Vessey, or anybody else. I just want to point out that the JCS were opposed to creating this Unified Command in the first place. It was only due to the course of the hearings that we held in open session, much to the chagrin, I must say, of a number of the Chiefs, who felt that it was not Congress business to get involved in command and control matters that our business was to authorize and appropriate the hardware.

My own belief has always been that the command and control structure, as such, shapes the nature of the equipment that we are going to be asked to fund. I am trying to find out, so that we can be helpful, if we are sometime moving in a direction that might be for one reason or another opposed by the JCS.

I am not saying that they don't have wisdom, but sometimes the bureaucratic structure is such that you get into competition. Originally, for example, they wanted to go to EUCOM. There was one suggestion made several years ago that the reason to go to EUCOM is that we can somehow take a bootstrap and pull it up and get the Europeans involved in the Persian Gulf.

A lot of us did not agree that it would be helpful, in fact it might be harmful, to have the Europeans involved in that situation, given their view of activities in the Persian Gulf.

I don't want in any way to compromise your confidentiality. I will defer the question until such time as the chairman himself comes forward and at that time I might ask him, and he has been about as forthright and candid as any member of the services I have had testify.

He has said exactly what he believes and it has been refreshing. I will defer my question.

General **Kingston**. I would appreciate it if you would ask him what my recommendation was at that time. I certainly do not think for a moment, Mr. Chairman, that this is not yours and Congress business. I think it definitely is. I have a personal ethical problem here at this time.

Senator **Cohen**. I appreciate that fully. I don't want to cause any problems along this line. I must say I want to commend all the witnesses. Sometimes it is perceived you have a bunch of politicians up here who are out to upset the applecart and don't know what they are talking about and you tell them as little as possible and disengage them.

If you don't inform us what is involved, we can't defend on the floor when somebody on the floor says "We don't want to fund this. It is absurd. It is duplicative and expensive."

We have to be in a position to know what we are talking about if we are going to move in that direction.

Let me go on to the last area of questioning which is about the deployment of troops in the Southwest Asian region. What does that mean in terms of its impact on Europe?

Scenario one, the worst case being Soviet invasion or Soviet subversion, Iran-Iraq spillovers.

General **Klein**. Dr. Blaker and I will both discuss this. I will ask him to start and then I will pick up.

Dr. **Blaker**. The CBO study which raises this issue has a point. There is always going to be a risk that to deploy significant forces to Southwest Asia and get them engaged there you may have great difficulty in meeting other commitments, such as in Europe if war breaks out there. That is a valid point and there is no way of getting around it. But, it is recognized. On the one hand it is recognized politically. Since 1980 we have been committed to making that point with the Europeans; we have argued extensively that they have to do more to meet that contingency if it should arise.

On the other hand however, there are some aspects some nuances to the problem which we think you should be aware of.

[Deleted.] In that kind of scenario we are not too badly off. Everyone recognizes, I think, that in terms of manpower or industrial strength, NATO, with the United States, has more capability than the Warsaw Pact.

[Deleted.]

If we go to Southwest Asia with the intention or with the prospect of engaging Soviet forces, [deleted].

All of these are nuances to the fundamental problem. Of course, there is a risk associated with it. But we believe that there is also a risk, an immediate risk, if we do not have the capability of implementing our strategy in Southwest Asia. If we make it clear to the Soviet Union that we will not oppose them in Southwest Asia, we believe we increase the chances that they will move into that area. Those are general things. Perhaps General Klein can comment.

Senator COHEN. What has been the European response or receptivity to the notion they have to do more?

Dr. BLAKER. It is mixed.

[Deleted.]

Senator COHEN. Even under the Kohl government, as such, in Germany now?

Dr. BLAKER. We believe so. One of the key steps in this thing will be the presentation of a study in June which was commissioned about a year ago, a NATO study. It is entitled [deleted].

Getting them to deal with this problem seriously has taken 2 years. We think that the study is a serious effort to deal with the problem and will begin to add momentum to their effort to fill in the potential gaps. They face severe problems in doing that. They face severe problems because of the economic situation and because of the political situation.

[Deleted.]

I can't in all candor say that we are absolutely thrilled over how well we have done so far.

Senator COHEN. I know that. I take the opportunity on every occasion to speak to, especially the Germans, and try to persuade them that we cannot defend the Persian Gulf alone, recognizing that the Germans are never going to be able to deploy forces beyond German soil, at least in the foreseeable future.

[Deleted.]

They can do things within the NATO geographical boundaries. That seems to be the code word, that NATO can only deal with NATO, but there are things they can do. They have the master restationing plan as well. They are very reluctant to deal with that politically.

It seems somehow the message has to get through if we are going to be building two aircraft carriers, one of the carriers we are going to add to that region which will again come under attack this year, and if the budget cuts out 5 percent of the real growth this year, we are going to need some help.

If we can't have help projecting power, we are going to have to reexamine the arrangement we have. We have political problems at home, too. It is very difficult for me, by way of example, to go back to the State of Maine and say we are cutting out all these programs, the WIC program or vitamins for lactating mothers, but we are able to help out by putting a couple of aircraft in the Persian Gulf to defend the interests of the Japanese and the Europeans when they are saying "We can't raise the defense budget but 3 percent this year."

It becomes very difficult to handle that politically for me and I assume for other members of this committee and the Congress.

General KLEIN. I think Dr. Blaker has covered it fairly well. I might make a few comments and observations.

We certainly recognize that Southwest Asia, and obviously your committee did also, is the toughest area to deploy to and to sustain and that we also recognize that by deploying these forces there, particularly the combat service support forces, that there is a risk with regard to NATO.

On the other hand, I might point out to you if the timing is right and we take three divisions into that area, into Southwest Asia, we may well deter the Soviets from coming into that area and we really have not lost anything with NATO because [deleted] if the timing is right.

[Deleted.]

Senator COHEN. Let us suppose it does not happen that way. That it is not a Soviet invasion, but rather feeding the fires of revolution and subversion and they decide to send in a PLO force to topple Bahrain or Oman, maybe the Saudis themselves or maybe there is a spillover of the war between Iraq and Iran into some of these other countries.

Your justification for taking action is much different. You might have far less notice as well. If you don't have that kind of notice, you don't have the kind of nature of a Soviet threat, but you have that contingency to deal with.

Taken another step further. If you were a Soviet strategist, how would you orchestrate that? Assuming you have no direct involvement and you don't even intend to send troops across the Transcaucus Mountains into Iran, but simply to assassinate Khomeini and blame the CIA. Consequently, there would be a good deal of internal turmoil and a lot of activity taking place where you decide you have to be on alert and move some troops that way.

As a Soviet strategist would you simply focus on that one region or would you try to cause a good deal of diversion by way of increased activity in Central America or maybe mobilization of the troops in East Germany?

You would not simply pool our resources and concentrate our response to one area of the world, would you?

General KLEIN. In all probability not, but I know General Kingston has planned for those kinds of contingencies. So I will let him answer.

General **Kingston**. Before you asked General Klein his view as a Soviet strategist, I would take that question. That is part of the discussion I would like to comment on, sir.

Right now I have [deleted].

I get the requirement [deleted].

I then move other forces and do other things to enhance my [deleted].

Those are the types of things that we are preparing and training and exercising to do as well as the big plan.

Again, we have had many visits to the area in the last year and a half. As I said earlier, I met with the heads of the forces of five different nations. My component commanders and staffs have met all the way down in some cases with their force components.

Annually we have done [deleted] with the nations in the area. Every time I go on a Bright Star or Jade Tiger I do a [deleted] just to get at this type of problem.

So, I think that if something happened [deleted] we could respond. [Deleted] it would be a reaction, but we still could respond.

Senator **Cohen**. I will ask the State Department representative what the reaction was diplomatically to this kind of quick deployment of the AWACS and tankers to the Egyptian Air Force in responses to the situation in Sudan.

STATEMENT OF RAND BEERS, DEPARTMENT OF STATE

Mr. **Beers**. I appreciate your asking that because I wanted to elaborate on what General Kingston said.

As he correctly pointed out, not every response to every contingency necessarily involves a direct response. There are indirect military responses in which we provide military support such as ammunition and equipment resupply and there are political responses in which we seek through diplomacy to bring an end to hostilities. There are also responses in which we urge other states in the region to help defend against threats that do not necessarily require direct U.S. involvement.

With respect to the reaction of the states in the region to our deployment to Egypt in association with the Sudan contingency I think it is fair to say [deleted].

I must say in all candor that [deleted] in that regard.

Senator **Cohen**. Let me say that whatever military reinforcement we gave to the military leaders and to the state leaders in Egypt and Sudan I think was perhaps fundamentally undermined by what appeared in the Washington Post. On the front page of the Washington Post there was an indication that our intelligence officials did not place as high or did not see the threat quite as intensive or real as President Mubarak did, but that we yielded to his demand in that regard. That seemed to me to put a bull's eye around Mubarak's head, that Mubarak rather than we made the assessment there was a threat that we needed to respond to and let it go at that.

We ended up making it look as though Mubarak got hysterical and we yielded to the pressure to send those planes over there.

My reaction is that it undermined whatever good will we had engenedered when a statement got out. This is not defense officials. This is to quote intelligence officials.

General KINGSTON. I don't know from whom they got that from, [deleted].

Senator COHEN. I agree and I have checked this out with various officials. Judging from the way in which it was handled in the press, they have a right to be mad about it. If I were Mubarak, I would be outraged. It looked like we were blaming him for being hysterical.

Tell me about your relationship with General Creasy.

General KINGSTON. Sir Timothy Creasy, Chief of the Defense Staff of the Sultanate of Oman has been my personal friend and military colleague of many years. [Deleted.]

Shortly, before he was about to retire as a senior four-star military man from the United Kingdom, Mrs. Thatcher informed him that the Sultan of Oman had requested his service. In the mid-seventies General Creasy had been commanding general of the Omani land forces, so the Sultan knew him, respected him, and had confidence in his ability.

Mrs. Thatcher decided to send General Creasy back as an officer serving in the British military rather than as a contract officer. He returned to Oman with very good credentials and direct access to the Sultan [deleted].

Senator COHEN. Why don't we deduct that from the foreign military assistance we give [deleted]. We should make it that clear that if you are going to impose those restraints and struggle [deleted] that it costs you.

General KINGSTON. That is a very good way to put it. [Deleted.]

OMANI TROOP AND USRDF COOPERATION

Senator COHEN. What about the cooperation between Omani troops and USRDF, formerly RDF troops?

General KINGSTON. The first year we went there there was no interface at all because we just conducted a Marine-U.S. Navy supported amphibious operation, were allowed to stay only 30 hours, very little operation and interface between the two units.

On Jade Tiger we had some, not a great deal, but we did exchange programs and we had some of our people working with theirs, exchanging weapons and how they do things and explaining their Army and their personnel to us.

The Marines worked with them on that. The best thing we did at the request of the Omani officials on Jade Tiger was that we sent in two medical teams to go back into the area where we ran the operation last year and treated the villagers because in Omani when a female member of a family has a problem, she tells the male, either the father or the husband, he goes to the doctor with the symptoms and he comes back with the treatment and pills or whatever is required.

This year we sent better trained teams with female doctors who were allowed to treat the female patients. In a very short period, within less than 24 or 48 hours, our male doctors from those teams were treating not only males but females. They gratefully accepted.

They want that type of thing back when we can do it. We can do that with no problem.

Senator COHEN. What about training exercises? Are they still being conducted in the Bahrainian winters?

General KINGSTON. I am trying to get back and we are [deleted]. That is great in December and November, but we have to get back during the heat of the year. [Deleted.]

Senator COHEN. Are we working on how we consume water and so forth, and those logistical problems?

General KINGSTON. Yes, sir.

Senator COHEN. Thank you very much. You have been most patient this afternoon.

I apologize for having to leave you so many times. Your testimony has been very helpful to me. I will see to it that all the members have access to a copy of the transcript.

General, I will ask you perhaps to give me an estimate on what it costs to turn that C-5 around.

General KINGSTON. [Deleted.] I have one more comment.

I would like to invite you and members of your committee down to my headquarters so that you can see what you have given birth to, so to speak, and also to give you an indepth discussion on what my mission is, what my capabilities are and what we have done in the past 3 years to produce what I am very professionally comfortable with. I would like you and your committee members to come down.

Senator COHEN. We might take you up on that offer. It would be very helpful.

[Additional questions submitted to the witnesses to be answered for the hearing record follow:]

QUESTIONS SUBMITTED BY SENATOR SAM NUNN

VITAL INTERESTS AND MAJOR U.S. OBJECTIVES IN SOUTHWEST ASIA

Senator NUNN. What do you consider the major objectives of the United States in Southwest Asia; what are U.S. vital interests worth protecting?

General KINGSTON. The United States has the following major objectives in the region:

To deter over Soviet military aggression and to be prepared to combat the Soviets if necessary.

To protect U.S. and Western access to adequate supplies of oil.

To support other U.S. economic interests.

To counter and reverse Moscow's efforts to extend its influence by other means.

To continue to pursue a comprehensive, lasting Middle East peace.

To strengthen local and regional stability by helping to improve economic conditions in and defense capabilities of friendly states.

To pursue, where possible, opportunities to expand U.S. influence with selected regional states.

The United States has two primary national security interests in Southwest Asia. The first is to prevent the Soviet Union from acquiring political-military hegemony in the region. This requires that the United States support the sovereignty of regional states friendly to the United States. The second is to maintain continued access to Persian Gulf oil. This means that the United States in concert with intra- and extra-regional allies and friends, must prepare to meet threats of any magnitude, from internal subversion to large scale Soviet aggression.

MAJOR THREATS IN SOUTHWEST ASIA

Senator NUNN. What do you consider the major threats in this region that might involve the need for U.S. involvement from a low-level to a high-level threat?

General **Kingston**. U.S. objectives in Southwest Asia will be pursued in the context of a rapidly changing political, economic, sociological, and military environment. Profound changes have occurred in the past three years. The Iranian revolution has spawned an Islamic revival, fears of Iranian subersion and the Iran-Iraq war. In addition, rapid economic growth in some countries, and economic deterioration in others, has further altered the balance of power, heightened social tensions, and increased the potential for political instability. At the high end of the threat spectrum, Moscow's continued occupation of Afghanistan and the proximity of Soviet forces to the Gulf are a major concern to U.S. military planners.

Through security assistance programs to bolster local defense capabilities, and careful planning and preparations for many threats, including a Soviet invasion, we hope to deter crises that might threaten vital U.S. interests, thus reducing the need for U.S. military involvement.

FORCE RESPONSE TO SWA THREATS

Senator **Nunn**. What forces do you as USCENTCOM commander have available to respond to major threats in SWA that might involve the need for U.S. involvement, from a low-level to high-level threat?

General **Kingston**. USCENTCOM formulates plans to meet all possible threat levels present in its area of responsibility. A full deployment of USCENTCOM would involve nearly 300,000 personnel, including those who would operate in support of the command. A full deployment might involve the following types of forces:

U.S. Central Command Headquarters (augmented).
U.S. Army forces Central Command:
Headquarters, U.S. Army Central Command.
1 Airborne Division.
1 Air Mobile/Air Assault Division.
1 Mechanized Infantry Division.
1 Cavalry Brigade Air Combat.
Rangers and Unconventional Warfare Units.
U.S. Navy Forces Central Command:
Headquarters, U.S. Navy Central Command.
3 Carrier Battle Groups.
1 Surface Action Group.
5 Maritime Patrol Air Squadrons.
U.S. Marine Corps Forces: 1⅓ Marine Amphibious Forces.
U.S. Air Force Central Command:
Headquarters, U.S. Air Force Central Command.
7 Tactical Fighter Wings.
2 Strategic Bomber Squadrons.

A partial deployment would consist of a smaller level of forces tailored from the above listing to suit the particular level of threat encountered.

Senator **Nunn**. How do you plan as UNCENTCOM commander to deal with a major Soviet invasion?

General **Kingston**. Hopefully we can help preclude contingencies which would require the application of force. The most important task facing me is that of implementing a strategy of deterrence. If deterrence fails and if directed, the U.S. Central Command could deploy a tailored and balanced four service force.

Senator **Nunn**. What are your current capabilities to deal with this threat?

General **Kingston**. To counter the worst case threat UNCENTCOM can [deleted].

RAPID DEPLOYMENT FORCE

Senator **Nunn**. Is the RDF primarly structured to deal with the worst case or is the RDF primarily structured to deal with a lower level contingency which may be a more likely threat?

General **Kingston**. The USCENTCOM force list for planning consists of rapidly deployable forces structured to meet contingencies of any size ranging from counterinsurgency warfare up to and including a full scale Soviet invasion. Any USCENTCOM deployment force would be tailored with the quantities and capabilities needed to meet such threats.

Senator **Nunn**. What are U.S. plans and capabilities to respond and react on strategic warning and insert U.S. forces prior to Soviet invasion?

General **Kingston**. U.S. responses to strategic warning indicators will be reviewed and decided by the National Command Authorities based upon the recommendations of senior military leaders. Although it is impossible to project how a contingency—and U.S. responses—might unfold in Southwest Asia, military planners incorporate prudent use of warning time into their operational plans. Using Iran as an example, a Soviet invasion of that country (there largest campaign since World War II) would require [deleted] and at least a [deleted] mobilization and preparation period. An extensive command and control network would have to be established. A logistic support system would have to be set up. Forces would be mobilized. Some [deleted] would have to be loaded and readied. Since US intelligence would [deleted].

A decision by the National Command Authorities (NCA) to [deleted] we can flow a very credible force that is designed first to deter and secondly to dissuade the Soviets from continuing their attack if deterrence fails.

Given [deleted] of warning time, we would have on the ground at the end of that period:

[Deleted.] Closure times vary for different forces.

Senator NUNN. Assuming that, for whatever reason, Soviet forces achieve a toehold or even a stronghold in SWA, what emphasis would you place on the capability to isolate these forces and sever their lines of communications?

General KINGSTON. In the event that a stronghold is achieved by Soviet forces, emphasis would be placed on [deleted].

Senator NUNN. What military capabilities would be required to perform this mission?

General KINGSTON. [Deleted.]

SOUTHWEST ASIA BUDGET

Senator NUNN. How much of the fiscal year 1984 budget request is earmarked for the Rapid Deployment Force? How much was in the fiscal year 1983 budget?

General KINGSTON. It is difficult to state precisely how much of the fiscal year 1984 budget is earmarked for "the Rapid Deployment Force" and Southwest Asia because so many of the programs are imbedded in our overall force structure. To the extent that programs can be identified, we can group program costs into two categories: SWA-specific programs (those that would probably not be needed if we were not required to develop and maintain rapid deployment capabilities specifically for Southwest Asia) and other rapid deployment programs (those that, although they may have been developed primarily to support our Southwest Asia strategy, would be needed to support missions and operations in other regions).

The fiscal year 1983 and fiscal year 1984 costs for these programs are summarized below:

[In millions of dollars]

	Fiscal year—	
	1983	1984
SWA-specific programs	567.0	606.0
Other rapid deployment programs	1,090.0	1,599.9

Senator NUNN. Do you think the announced strategy, coupled with a credible capability to implement it, would have a deterrent value?

General KINGSTON. We have that deterrent value now.

RDF SIZE

Senator NUNN. CBO has commented on the plans to increase the size of the RDJTF. What are these plans, what types of forces are involved and what impact would this have on capabilities needed for other contingencies?

General KINGSTON. Currently, we have assigned for planning a very substantial combat capability for the region: three Army Divisions, seven Air Force Tactical Fighter Wings, three Navy Carrier Battle Groups and one and one-third Marine Amphibious Forces. [Deleted.]

The CBO report, "Rapid Deployment Forces: Policy and Budgetary Implications", could mislead readers that there is a commitment of forces to USCINCCENT which automatically reduced force levels for the defense of Europe and has therefore increased the risk of a successful NATO defense. In the event of a contingency, commitment of forces will be based upon the recommendations of senior military leaders. Actual commitment of US Forces for movement to a potential crisis area and their subsequent commitment to military operations would be reviewed and decided by the National Command Authorities. [Deleted.] However, it will be extremely difficult to redeploy forces from one theater to another during a global war. The NATO International Military Staff is conducting a study which would detail the impact on NATO of the loss of those forces and support considered for deployment to SWA. The study is due to be completed this summer.

Senator NUNN. What types and mixes of forces are best suited for SWA scenarios?

General KINGSTON. USCENTCOM has the unique capability to tailor a force to meet a specific threat, thereby receiving the maximum contribution from each of the services. This force can be designed to accentuate our strengths and capitalize on enemy vulnerabilities. A typical force package would consist of air defense forces followed by light ground forces and reinforced by heavy forces as strategic lift permits.

Senator NUNN. How important are tactical air and E-3A AWACS capabilities?

General KINGSTON. [Deleted.]

The E-3A AWACS is a valuable asset and a significant "force multiplier" within this environment. Its long range air surveillance radar can detect, identify, and characterize enemy air movements in time to marshal U.S. tactical air forces against the threat. The AWACS communication (voice and data) capabilities with USN, USMC, USA, and host nation forces also help integrate our total offensive, air defense, and C2 effort.

Senator NUNN. What arrangements, if any, do you have with Saudi Arabia in terms of facilities and training with other forces?

General KINGSTON. Currently, USCENTCOM has no arrangements that allow our forces use of Saudi Arabian facilities. [Deleted.]

Senator NUNN. What E-3A AWACS capability do you have available to USCENTCOM now, from where, and what do you anticipate when the Saudi AWACS sale is operational?

General KINGSTON. The main E-3A AWACS operating base is Tanker Air Force Base, Oklahoma. [Deleted] the Saudi AWACS buy will not see deliveries until fiscal year 1985-86 (longer to become operationally ready) USCENTCOM does not see significant Saudi airborne early warning and surveillance support until, at least, the late 1980's. [Deleted.]

USCENTCOM MISSION

Senator NUNN. What is the mission of your organization and what are the specific responsibilities?

General KINGSTON. As a Unified Command, USCENTCOM has a geograhic area of responsibility encompassing 19 countries in Southwest Asia, the Arabian Peninsula, and the Horn of Africa. The command is also responsible for security in the Red Sea and Persian Gulf. Missions for which USCENTCOM is responsible include deterring aggression through readiness and executing the military contributions to U.S. foreign policy in my area of responsibility. USCENTCOM must plan and, if directed, execute operations to assist friendly nations. The command trains and exercises U.S. and foreign forces and establishes regional military relationships as directed by JCS.

USCENTCOM furnishes advice and assistance to U.S. diplomatic missions throughout the area, and provides for noncombatant evacuation and disaster relief operations. On October 1, 1983, USCENTCOM will assume responsibility for managing security assistance in the region. In peacetime, USCINCCENT commands the U.S. forces located in the USCENTCOM area of responsibility; during wartime or crisis, augmentation forces deployed to his area of responsibility would be placed under this command.

U.S. READINESS COMMAND

Senator NUNN. Admiral Hunter, how large is the U.S. Readiness Command in terms of the headquarters staffing? What is the military/civilian breakdown since 1978 to the present? What is planned in the fiscal year 1984 and FYDP?

Admiral HUNTER. The current headquarters staffing of USREDCOM is 367. There are 290 military and 77 civilians assigned. The military/civilian breakdown since 1978 to present is as follows:

	Total	Military	Civilian
Year:			
1978	344	272	72
1979	334	264	70
1980	322	251	71
1981	339	263	76
1982	361	285	76
1983	367	290	77

The fiscal year 1984 increase, as requested, is for an additional 52 spaces—43 officers, 2 enlisted and 7 civilians. Increases beyond these are predicated upon formalization of tasks already assigned to USREDCOM and the anticipated formalization of additional mission/tasks. Such increases, however necessary, remain subject to OJCS and Service approval and inclusion in individual Service FYDPs.

RDJTF

Senator NUNN. When the RDJTF was established, and then CENTCOM, did REDCOM become smaller? If so, why? If not, why not? Did any of REDCOM's previous responsibilities shift to CENTCOM? How many general/flag officers are assigned?

Admiral HUNTER. Yes; USREDCOM did become smaller. Spaces were transferred to the RDJTF to help establish the RDJTF Washington Liaison Officer and to transfer responsibility for a JTF capability based on the assumption that the RDJTF would have a worldwide JTF responsibility.

The responsibility to provide a JTF Hq for contingency planning worldwide went to the RDJTF for one year, then reverted to USREDCOM when the RDJTF was designated as having a Southwest Asia focus only. Therefore, there are no USREDCOM functions which have been shifted to USCENTCOM.

Currently there are six general/flag officers assigned against USREDCOM spaces. While the manning charts show eight general/flag officers, both the Deputy Commander in Chief and myself are actually assigned against Joint Deployment Agency (JDA) spaces but serve in a dual-hatted capacity with both USREDCOM and the JDA.

JOINT DEPLOYMENT AGENCY MISSION

Senate NUNN. General Baginski, what is the mission of your organization? What are the staffing levels, past, present and future, and where were these functions performed prior to establishment of this organization? How many general/flag officers are assigned?

General BAGINSKI. The mission of the Joint Deployment Agency (JDA) is to plan, coordinate, and monitor movements of mobilized US Armed Forces, both Active and Reserve, within the United States and to overseas areas as reinforcements for US unified and specified commands, During a crisis situation, the JDA coordinates deployment activites to ensure that combat forces and materiel are provided, when needed, to a commander conducting operations anywhere in the world. In particular, the JDA:

Functions as the focal point for information relating to deployment planning and actual deployment operations.

Coordinates activities to ensure forces and materiel are available and can be moved to support military objectives. This is accomplished through and OPLAN refinement process, which identifies specific forces and equipment in an OPLAN and adjusts resupply and reinforcement schedules. By matching validated requirements of overseas commands with capabilities of providing organizations and Transportation Operating Agencies (TOAs), the refined OPLANs accurately reflect how specific units or materiel are planned to move to which port on what day.

Assembles and maintains timely data relating to the deployability of military combat and support forces. This information is constantly refined and updated by members of the joint Deployment Community (JDS) and is available to the unified and specified commands for planning and execution purposes.

Administers a computer-based data processing system, the Joint Deployment system (JDS), to optimize strategic lift resources in support of crisis deployments. When a crisis situation develops requiring execution planning and possible execution, JDA loads the applicable OPLAN(s) into the Joint Deployment System data based and coordinates deployment-related actions to support the crisis. The JDS and its interfaces with the JDC ensure efficient use of limited transportation assets and a coordinated deployment flow.

During actual deployments, monitors the movement of forces and materiel, provides movement status to the JDC, and interacts with the JCS and other members of the JDC to optimize the deployment flow.

Prior to JDA several organizations tried to perform its functions. There was no focal point for information relating to deployment planning and execution. For example, the Joint Transportation Board allocated lift. The Joint Chiefs of Staff were responsible for OPLAN refinement. The supported CINC in conjunction with the National Military Command Center attempted to monitor deployment execution. Supported and supporting CINCs plus Service Headquarters all dealt directly with the Transportation Operating Agencies. Resolving deployment problems was a secondary mission for all these commands and agencies. Time and resources were not available for them to properly deal with the entire deployment problem. All these considerations led to the formation of JDA.

Staffing Levels

Fiscal year:	Personnel
1982 (Approved)	168
1983 (Approved June 30)	[1] 181
(Approved December 31)	[1] 188
1984 (Proposed)	[1] 211
1985 (Proposed)	[1] 235
1986 (Proposed)	235
1987 (Proposed)	[2] 227

[1] Joint deployment system development.

[2] Reduction as JDS is fully on-line.

GENERAL OFFICERS ASSIGNED

	Rank	Service
Title:		
Director, JDA	0–10	Army.
Vice Director, JDA	0–9	USAF.
Chief of Staff, JDA	0–8	Navy.
Director of Deployment[1]	0–8	USAF.
Deputy Director of Deployment[1]	0–7	Army.
Director of Command, Control, Communications and Computer Systems	0–7	USAF.

[1] Dedicated to JDA. Others are dual-hatted USREDCOM.

Senator NUNN. General Kingston, from an operational commander's perspective, what are the pro's and con's of the current arrangements for command of U.S. forces operating in or near the Persian Gulf Littoral?

General KINGSTON. Under existing command arrangements all forces within the USCENTCOM AOR are under my operational command. This unity of command is necessary for success on the battlefield. There presently exists command agreements between myself and the other unified commanders which delineate the exchange of operational command/control that will occur during certain situations.

LIGHT ARMORED VEHICLE

Senator NUNN. General Kingston, specifically, what level of utility do you attach to the Army and Marine Corps efforts to field the so-called light armored vehicle with their light forces?

General KINGSTON. There are potentially two major problems that could be significantly reduced with the adoption of the light tank. First, the light tank would satisfy both the Army and Marine Corps' desire to enhance the fire power and ground mobility of their light forces; the light tank does exactly that. Second, because of the tank's reduced size and weight in comparison to a main battle tank, we could deploy greater numbers into the region which would increase our creditability as both a deterrent or fighting force.

Senator NUNN. In reports over the past 2 years, the GAO has expressed concern with the availability of units to provide support services to combat forces if they were to be engaged in SWA. What is the situation now with regard to availability of these support units to USCENTCOM?

General KINGSTON. The GAO surveys were generally performed during the formative years of the Rapid Deployment Force. The reports recognized that major efforts required were in the Army, which tasked to provide the preponderance of interservice support such as port operations, grave registration, water and POL distribution and ammunition handling. Since then, those combat support and combat service support units, required for SWA support have been specifically designated.

In addition, their authorization level of organization have been increased to match the units being supported which will facilitate equipping and staffing the organizations. The Army also identified in their [deleted] service support units. This will enable a [deleted] force with adequate service support to deploy with little or no warning. Efforts to increase our combat service support are continually monitored to ensure programs are maintained and contingency plans are supportable.

Senator NUNN. Does the operational environment (weather, altitude, soil, et cetera) place a premium on certain types of equipment and limit others—compared, for example, with the effectiveness this equipment might show in the European theater?

General KINGSTON. Yes. There are certain types of equipment that will be of more value in USCENTCOM's AOR than in the European theater. Examples of this equipment may be light weight desalinization equipment or improved chemical protection clothing with lower thermal stress. This equipment may be needed to withstand or because of the harsher environmental conditions encountered in the AOR, but it should function equally well in the more temperate European theater.

PROPOSED CONSOLIDATION OF MILITARY SEALIFT COMMAND AND MILITARY TRAFFIC MANAGEMENT COMMAND

Senator NUNN. How many flag/general officer billets will be reduced, if any, with the proposed consolidation of the Military Sealift Command (MSC) and Military Traffice Management Command (MTMC)?

General KINGSTON. None, pending a manpower survey to be conducted six to nine months following establishment of the integrated command, the Military Transportation Command.

Senator NUNN. How many and what grade does each organization have now?

General KINGSTON. MSC is authorized two flag/general officers and has two assigned. MTMC is authorized five and has four assigned.

Grades and services

MSC: 0-9 Navy (three stars), and 0-8 Navy.

MTMC: 0-8 Army (two stars), 0-7 Air Force (one star), 0-7 Navy, 0-7 Army, and 0-7 Army.

Senator NUNN. How many military and civilian spaces will be reduced with this consolidation?

General KINGSTON. The Office of the Assistant Secretary of Defense (Manpower, Reserve Affairs and Logistics) has estimated a savings of 200 to 300 personnel spaces (primarily civilian) by consolidation of duplicative functions during the elimination of one major command headquarters and four subordinate headquarters. Hiring controls currently in place in both commands will permit reductions to be achieved through attrition.

The consolidation of the two commands was predicated upon achieving improved efficiency in the surface transportation system. The accompanying fiscal economies and personnel savings were important additive benefits.

QUESTIONS SUBMITTED BY SENATOR CARL LEVIN

FORWARD HEADQUARTERS ELEMENT

Senator LEVIN. USCENTCOM believes that a Forward Headquarters Element should be stationed on land for military reasons. Others are urging that this contingent be deployed at sea. Why does USCENTCOM think it is so important that the Forward Headquarters be land-based, and what military capabilities are degraded if this HQ is deployed aboard ships in the region?

General KINGSTON. Placement of a Forward Headquarters Element (FHE) ashore versus afloat is a qualitative decision based on this command's assessed value of the functions to be performed. Most seriously degraded by an afloat headquarters would be the objectives of demonstrating acceptance of U.S. Central Command and its

FHE by the area governments and displaying resolve and commitment by the United States of America. [Deleted.]

Senator LEVIN. If this time is far distant, isn't it better to have a forward HQ on sea than not having one at all in the region?

General KINGSTON. [Deleted.]

PROGRAM OBJECTIVE MEMORANDUM

Senator LEVIN. Even before DOD and the President decide the final shape of the defense budget, the services submit their 5-year requests, known as Program Objective Memorandum (POM) to the Secretary of Defense for his consideration in drafting a final total budget. In their attempts to satisfy SWA their highest priorities as individual services, do you think that each of the services gave adequate support to meeting USCENTCOM needs in fiscal year 1984 budget POM submissions—in both the equipment and sustainability (beans, bullets, spare parts, clothing) area?

General KINGSTON. In evaluating the service programming objectives to satisfy SWA equipment and sustainability requirement, the services are giving USCENTCOM adequate support. This is not to imply there are no shortages, but across the board, the services will achieve approximately [deleted] percent of their SWA objectives within the midterm.

These programming efforts require continual support by the services, DOD, and Congress if we are to have a viable deterrent in SWA.

Senator LEVIN. By service, in what major areas did you recommend programs to each service which were reduced or rejected by that service in its POM drafting process?

General KINGSTON. For the fiscal year 1984 POM development, USCENTCOM did not formally interface with the Services in the POM process. However, my staff did brief service POM committees on requirements for and areas of concern to USCENTCOM. As a RDJTF Commander, I also had the opportunity to express my concerns with the Service 84 POMs through the JCS Joint Program Assessment Memorandum and during Defense Resources Board deliberations. Of the top three USCENTCOM programming priorities which are, strategic mobility, command control communications and intelligence (C^3I), and sustainability, none have been significantly reduced by the individual Services. Generally the Services demonstrated support for these programs in their POM submissions.

BUDGET PRIORITIES

Senator LEVIN. In setting Central Command's priorities, if this budget were reduced, where would it hurt least in fiscal year 1984—procurement of major equipment, logistics support and sustainability, airlift and sealift programs?

General KINGSTON. The general order of priority of all Defense programs, in descending order, is achieving readiness, providing sustainability, procuring modernization, and expanding the force structure. Beyond this order of priorities, it is extremely difficult to specify programs for Southwest Asia that could or could not be reduced because so many of the programs, such as strategic mobility, are embedded in the overall force structure and are needed for other areas of the world as well.

Senator LEVIN. As a way of helping to trim the defense budget, Senator Hart has suggested that the USCENTCOM headquarters complement be reduced from about 900 to 25. Just two years ago, your HQ had about 250 Personnel; now it is about 900. What accounts for this increase and how can you justify it? What would be the impact on USCENTCOM's ability to carry out its mission from imposing an HQ personnel reduction as Senator Hart proposes?

General KINGSTON. The 250 billets represents the mission requirements of the Rapid Deployment Joint Task Force. The RDJTF was established on 1 March 1980 as a separate subordinate element of U.S. Readiness Command.

However, in April 1981, it was announced that the RDJTF would become a unified command with Southwest Asia as its Area of Responsibility. From this point, increased authorizations were required to keep pace with the added functions and responsibilities of an evolving unified command.

By March 1982, JCS had allocated 967 billets for the future USCENTCOM, which was formally established on January 1, 1983. These 967 billets represents the best estimates of the manning required to run the Command once the full transition was completed. This will not occur until 1 October 1983 when full responsibility for all security assistance programs is assumed. However, JCS just recently reduced our authorizations by 121 billets; cutting us from 967 billets to 846—a reduction of almost 13 percent.

Other unified commands with overseas areas of responsibility have, over the years, developed support activities—infrastructures, if you will—which USCENTCOM, does not have. These other commands have mature component commands which are major Service commands in their own rights, with attendant resources, which our component commands do not have. Thus we cannot delegate functions and responsibilities to the components in areas where they have limited capabilities. Also, because we are not located in our area of responsibility, we carry the additional mission requirement to deploy on short notice. This is an overhead requirement not found in other overseas unified commands. Closely allied with the deployment issue, is the requirement to take "out of hide" the headquarters staff portion of a Forward Headquarters Element.

When these unique features and facts are considered, I believe USCENTCOM's authorizations are relatively austere and compare favorably with the other unified commands.

If the headquarters of USCENTCOM was reduced to 25 billets, it would cease to exist as a unified command. A unified command headquarters is a complex military organization with sunken manpower costs inherent to any headquarters and variable manpower costs dependent upon the size and scope of its responsibilities.

We originally estimated it would take aobut 950 people to perform the mission and responsibilities given USCENTCOM. This represented our best estimates of the manning required to run the command once the full transition is completed. It is noted that we are still in the transition process. The next major milestone will occur on Octoter 1, 1983 when we assume full responsibility for all security assistance programs and related activities in Southwest Asia.

It is further noted that we just recently took a reduction of 121 billets, almost 13 percent drawing us down to 846 personnel authorized.

The heart of the matter is: should there be a unified command charged with the responsibility for Southwest Asia? The answer is yes, and you can't operate a unified command with 25 people.

Senator LEVIN. The General Accounting Office, in a report last year entitled "Rapid Deployment Force: Limitations and Key Issues" reported that the Defense Department agreed with it that "logistics support problems, if unresolved, could limit RDF capabilities." It said DOD pointed out that a then-recently completed JCS assessment had concluded that "planned DOD programs will give the RDF a substantial capability to accomplish even its most difficult mission." What are USCENTCOM's most serious logistics support problems which interfere with its mission accomplishment?

General KINGSTON. The answer must be tempered by the threat we are countering, the assigned mission, the timeliness of NCA decisions and the overall world situation. But, in most scenarios, the common logistics problems faced will be rapid deployment of the forces into the theater and sustainment of their activities. Not only are the distances to be covered in deployment extensive, but the harsh and austere environment, as well as the lack of host nation logistics support and only minimal in-theater prepositioning require a force to bring almost all of its own combat support. Without adequate inter-theater mobility, combat forces cannot be brought to bear at point of attack soon enough to achieve our national objectives. Therefore, enhancement of all mobility forces must remain a top priority and those programs specifically designed to offset mobility shortfalls, such as prepositioning, military construction, facilities access, and host nation support must continue to be emphasized.

LOGISTIC SUPPORT PROBLEMS

Senator LEVIN. Does USCENTCOM agree with the JCS assessment that the logistics support problems will be substantially solved in the fiscal year 1983-87 or fiscal year 1988 time period?

General KINGSTON. Service programming has dedicated significant funding support to give the United States a credible force to deter aggression in the USCENTCOM Area of Responsibility (AOR). USCENTCOM supports the JCS assessment that Rapid Deployment Force capabilities to accomplish the assigned mission would be substantially increased if the proposed fiscal year 1983-87 programs were funded. But that assessment did not indicate that all logistics problems were resolved. In our major problem area of mobility and sustainability, it has been continuously stipulated that we are still faced with a strategic lift shortfall and that fiscal year 1988 and fiscal year 1989 programming, through a major step in the right direction, will alleviate only part of the shortfall. Nevertheless, planned DOD programs will give the U.S. Central Command an increased capability to accomplish even its most difficult mission, thereby reinforcing its strategic deterrent role.

CBO REPORT ON THE RDF—ARMY SUPPORT

Senator LEVIN. How does this JCS assessment reconcile with a recent CBO report on the RDF which reported that "analysis of Army data by CBO suggests that the current RDF would need approximately 49,000 more support personnel than are now available," and that over the next five years the Army plans to dedicate only 6,000 of its planned personnel increases to providing more RDF support? This would leave the RDF 43,000 personnel short in the critical support area, would it not?

General KINGSTON. First, it should be noted that the CBO report is based on information from the fiscal year 1983–87 program. Adjustments have been made since then which provide 16,700 more support spaces. In any case, the JCS assessment is correct in stating that planned DOD programs will give U.S. rapid deployment forces a substantial capability to accomplish even their most difficult missions. It is also true, however, that there is not enough support for all 24 divisions in the Army to fight simultaneously, and therefore we must continue seeking other accommodations, such as allied support.

CBO REPORT—DIVERSION OF NATO-DESIGNATED FORCES

Senator LEVIN. CBO says the administration intends to fill this support personnel shortage by drawing upon support forces available to deploy to Europe in a NATO war and that this plan rests on the expectation (thus far, unmet) that the NATO allies will be able to provide support beyond what current agreements specify. Is this true, will we be robbing Peter to pay Paul if we need to support our RDF forces in a Persian Gulf contingency? Why have the allies so far been unwilling to fill in this gap as we find it necessary to plan on diverting NATO-dedicated forces to the Persian Gulf to defend all our mutual interests?

General KINGSTON. To some extent, we are robbing Peter to pay Paul. But this is being done in concert with our allies and not to such an extent that we are assuming an unacceptable level of risk. We have been working closely with our allies on this issue; [deleted].

ALLIED COOPERATION

Senator LEVIN. In what other areas have the allies failed to fill in the gaps which might be left in plans for defending NATO Europe by our needs to assign NATO-dedicated US forces and RDF mission, also? What is being done to encourage or pressure the allies to increase their NATO defense contributions for this reason, and what prospects do you see for such efforts?

General KINGSTON. In addition to filling gaps in Europe for US support forces that might be diverted to Southwest Asia, we have asked for increased strategic lift assistance for the rapid reinforcement of Europe. Thus far, [deleted] allies have committed ships and aircraft for this purpose. This is an area where we have been fairly successful in obtaining allied cooperation. Otherwise, we continue to press, through multinational and bilateral channels, for increased allied assistance. The subject has been discussed in the past two and one-half years at four ministerial meetings, two meetings of the Permanent Representatives, and three conferences, as well as in bilateral talks. While the results of our efforts to date have not been as good as we would like, we believe the prospects are favorable. [Deleted.] While allied defense budgets will not permit them to undertake all these measures immediately, we do expect efforts to begin on the highest priority needs in the upcoming NATO Forces Goals.

Senator COHEN. The subcommittee stands adjourned.

[Whereupon, at 4:45 p.m., the subcommittee adjourned, subject to call of the Chair.]

DEPARTMENT OF DEFENSE AUTHORIZATION FOR APPROPRIATIONS FOR FISCAL YEAR 1984

THURSDAY, MARCH 24, 1983

U.S. SENATE,
SUBCOMMITTEE ON SEA POWER AND FORCE PROJECTION,
COMMITTEE ON ARMED SERVICES,
Washington, D.C.

AIRLIFT PROGRAMS

The subcommittee met in open session at 2:05 p.m., in room SR-222, Russell Senate Office Building, Senator William S. Cohen (chairman) presiding.

Members present: Senators Cohen, Wilson, and Nunn.

Staff present: L. Wayne Arny III, Michael B. Donley, James R. Locher III, and Patrick L. Renehan, professional staff members; Mark B. Robinson, research assistant; and Kathleen L. McGuire, staff assistant.

Also present: Jim Dykstra, assistant to Senator Cohen; Hank Steenstra, assistant to Senator Quayle; Arnold Punaro, assistant to Senator Nunn; and Bill Lind, assistant to Senator Hart.

OPENING STATEMENT BY SENATOR WILLIAM S. COHEN, CHAIRMAN

Senator COHEN. The committee will come to order.

Fiscal year 1983 was a banner year for airlift. Many important airlift modernization and expansion programs were approved by the Congress. Key among these were two major programs: Acquisition of 44 additional KC-10A advanced tanker/cargo aircraft under a multiyear procurement arrangement and initiation of procurement of 50 C-5B strategic airlift aircraft.

Funds were also appropriated to continue programs to improve the readiness, sustainability, and capabilities of the current fleet of airlift aircraft.

Three other important airlift programs were initiated in fiscal year 1983: The procurement of the European distribution system aircraft and the leasing of aircraft to begin the replacement of C-140B's and CT-39's.

The Congress also reaffirmed the importance it attaches to the vital augmentation of organic military airlift by commercial aircraft. This is reflected in the continuing congressional interest and support for the CRAF enhancement program and in the procurement of three wide-body commercial aircraft. Having these three commercial aircraft in the military inventory should lead to improved crisis use of the entire commercial airlift fleet.

The Congress took another potentially significant step last year by appropriating $60 million in research and development funds for the C-17 aircraft. The staying power of this decision is in question, however, especially in the absence of the necessary reprograming request from the Department of Defense for these C-17 funds. I hope we can address this at some length in a moment.

In light of the clear direction that was given to the airlift program area last year, the major task confronting this subcommittee in fiscal year 1984 is to insure that these programs are being effectively and efficiently executed and that costs are being carefully controlled and reduced to the extent possible.

In this regard, the subcommittee desires to comprehensively examine during today's hearing the airlift procurement programs, especially for KC-10A's and C-5B's.

There are two other airlift programs to which the subcommittee desires to give special attention during this hearing: C-17 R&D and the CRAF enhancement program. The subcommittee would appreciate a comprehensive presentation of the requirement for the C-17 aircraft and alternative R&D funding profiles.

On the CRAF enhancement program, the subcommittee would like to hear Air Force plans for early initiation of this program, which is the most cost-effective way of augmenting our airlift capabilities.

One behalf of the subcommittee, I extend a warm welcome to the two distinguished witnesses for today's hearing: General Allen, commander in chief of the Military Airlift Command: and Lieutenant General Skantze, Deputy Chief of Staff for Research, Development and Acquisition.

I expect other members of the subcommittee to appear from time to time throughout the hearing, General. With that, I think we should proceed.

General Allen?

STATEMENT OF GEN. JAMES R. ALLEN, U.S. AIR FORCE, COMMANDER IN CHIEF, MILITARY AIRLIFT COMMAND

General Allen. Thank you very much, Mr. Chairman.

I have submitted a detailed statement for the record. In the interest of time, I will highlight a few points.

MILITARY AIRLIFT COMMAND

The past year was indeed a period of very significant development for the Military Airlift Command [MAC]. It was also a period of heavy exercise commitment for MAC, and I am very pleased to report that the command performed very well during the course of those exercises.

They took place on a widespread basis, literally all over the world, Europe, the Middle East, Korea, Alaska, Central America, and to a considerable degree in the continental United States.

There was one facet of a particular exercise in which I think this Committee on Sea Power and Force Projection might have a specific interest. It was in association with the Reforger exercise in Germany last fall. One facet of that exercise was an airdrop, and, in coordination with the Army forces, we performed that airdrop in a rather unique way.

We launched 20 aircraft from east coast bases in the United States. Twenty C-141's loaded with over 1,000 paratroopers and over 80 tons of their equipment. Fourteen of the aircraft actually launched from Pope Air Force Base and six from Charleston Air Force Base. They launched at about 1 o'clock in the morning.

As they passed over Newfoundland in the vicinity of Goose Bay, they received their first aerial refueling from KC-10's. They proceeded across the North Atlantic. As they passed over the United Kingdom, they descended to low altitude into Central Europe on a low level route, and then over two drop zones in southern Germany. They hit those drop zones precisely as far as geography was concerned.

In timing, they were within 28 seconds of the desired time over target. Then 18 of those aircraft, without ever landing, had a second aerial refueling over the United Kingdom, a third aerial refueling over Goose Bay, Labrador, on the way home, and landed back at Charleston Air Force Base after 21½ flight hours.

In my judgment, that was probably the most dramatic example of real force projection I have ever had the opportunity to be associated with.

You might wonder what happened to the other 2 out of the 20 airplanes. We had an arrangement with the Army by which if there was a no drop that was their fault, the paratroopers would have to remain on board all the way back to Charleston Air Force Base. If there was no drop that was our fault, we would land at Rhein-Main and let the paratroopers off so they could participate in the exercise.

We had a minor malfunction with one of the spoiler doors on a C-141. That did not enable all of the paratroopers out of that airplane to drop prior to the time we crossed the perimeter of the drop zone. So they stayed aboard. In accordance with our agreement, we landed them at Rhein-Main.

The 20th aircraft had an overheat condition as it came back across the North Atlantic. It diverted into Keflavik as a safety precaution.

We were proud of that exercise and we thought it was a very fine demonstration of force projection.

As well as we have performed in our various exercise commitments, however, when balanced against our overall requirements, our capability is significantly inadequate. In accordance with the data provided in the congressionally mandated mobility study, we have a requirement for 66 million ton-miles per day and our capability today is less than 50 percent of that 66 million ton-miles per day.

With the improvements which you mentioned in your opening statement, the C-5B, KC-10, additionally sustainability and CRAF enhancement, all of which I support very, very strongly, we will get up to about 48½ million ton-miles per day by the late 1980's. We will still have a shortfall of 17½ million ton-miles per day as measured against that requirement of 66 million ton-miles per day.

REPLACEMENT AIRCRAFT FOR C-130 AND C-141

Concurrently, we need to start planning now for replacement aircraft for the C-130 fleet and for the C-141 fleet. Some of those C-130's today are older than the B-52-D's which are about to be retired by the Strategic Air Command. Without a replacement in hand, we must plan on operating those aircraft for at least another 10 years.

By the mid-1990's, some of this C-141 fleet will be as old as the C-130's are today. For that reason, I strongly support a continued viable C-17 program. I will be happy to go into that in more detail in response to your questions. It is also needed to satisfy the 66 million ton-mile per day requirement.

The C-17 will allow us to phase some of the C-141's into the Guard and Reserve and thereby extend the lifetime of the airplane. It will allow us to retire the older C-130's and it will allow us to satisfy the significant shortfall which we now have in intratheater airlift capability.

Finally, Mr. Chairman, I would say a word about our most important resource—our people. Retention, both enlisted and officer, is at an all-time high today and, as a result, we have the highest quality people in our force that I believe I have seen in almost 40 years in uniform.

MORALE IS HIGH

Our people believe they are doing an important job. They believe they are doing it well, and they believe that their efforts are appreciated. It is important that we retain this high quality and these high retention rates in the face of increasing competition from the civlian sector as the economy improves.

Senator COHEN. Will we retain that high morale and retention rate if we freeze the pay?

PAY FREEZE TO HAVE SEVERE IMPACT

General ALLEN. My next point, as a matter of fact, is that I regret very much the necessity that generated the freeze in pay this year. It is going to have an impact. I think if it is only 1 year, it is manageable. If it is a trend, or even if it looks like a trend for the future, then it is going to have a severe impact on our retention rate. No question about it.

Senator COHEN. Last year they took a cut. The projected 7-percent increase was cut to 4. So now this freeze is for just 1 year and we will get it back up.

General ALLEN. Yes, sir.

Senator COHEN. There are several members who say whatever reduction we are going to achieve in the defense budget will not come out of the pay.

General ALLEN. I understand.

Senator COHEN. I assume from your statement you would be opposed to providing pay increases?

General ALLEN. I will never be opposed to appropriate pay increases. I think it is important that our people retain their earning power. Of course, one thing that tends to ameliorate it a little bit is that the inflation rate is down, and the loss in earning power is not as significant as it might have been several years ago.

It seems to me that a formula which keeps the pay in line with the inflation rate is only fair.

I will say also that a potentially adverse impact on retention is the talk that you hear here and there about adjustments to the retirement system. Every time there is such an article in the Air Force Times or in other media, it generates a significant level of concern and a tremendous number of questions within the enlisted force as well as within the officer force.

REINSTITUTING THE GI BILL

Also, every time I go out and visit with my wings and personnel and have meetings with my people they ask me, "General, what is going to happen to the GI bill? Do I need to get out of the service in order to take advantage of it before it expires?"

I commend to you either a new GI bill or a clear signal that the current GI bill is going to be extended. That is a matter of considerable concern to the troops out in the field.

Senator COHEN. You would support the reinstitution of the GI bill?

General ALLEN. I would indeed, yes sir. As a matter of fact, I personally would support very strongly a transferability provision allowing a member to transfer benefits to one's dependents. It is in the American psyche to give your children a good education.

So many of our best people leave us at the 12- to 14-year points, and they will say, "General, I don't really want to get out of the Air Force. I love the Air Force. I love what I am doing. But I have a couple of kids coming along, and I have to put them through college; but I just can't do it on my current pay."

If we could ease some of that pressure on those members, I personally believe it would be a very strong incentive.

Senator COHEN. General, as you know, I have introduced a reinstitution of the GI bill again this year. When the Secretary of Defense originally was sworn in to office he indicated his support for the GI bill as well.

That has been deferred 2 years now and deferred again. This is one of the areas that I think we do share a commitment over.

General ALLEN. Yes, sir. My real bottom line here, Mr. Chairman, is that we can't take the current high retention rates for granted. They are very fragile. They are subject to a lot of different influences and we must make sure we look after our people and that our people know that we are looking after them.

That concludes my opening comments.

[The prepared statement of General Allen follows:]

PREPARED STATEMENT OF GEN. JAMES R. ALLEN, COMMANDER IN CHIEF, MILITARY AIRLIFT COMMAND

THE AIRLIFT MISSION

Mr. Chairman, members of the committee, I welcome the opportunity to appear before you today to discuss the readiness of the Military Airlift Command (MAC); its ability to project forces, as needed, to any part of the world; its ability to sustain these forces in combat; and the need to improve on this capability in the years to come.

THE MILITARY CHALLENGE

During this decade of challenges to our vital interests and, indeed, very real threats to our national security, there are certain broad categories of defense improvements which are so important that they simply cannot be deferred. Among these is the enhancement of our strategic nuclear deterrent posture.

Strategic balance

We must attain, and clearly be perceived to maintain, an essential balance of strategic capability vis-a-vis that of the USSR. Such a balance is essential to deterrence and the credibility of our military posture as a whole.

Projection of conventional forces

A priority closely following that of necessary improvements in our strategic posture is the need to improve our ability to project conventional land and air forces rapidly to any area in which our interests might be threatened. The impracticality of stationing U.S. forces in all of the potential trouble spots of the world during peacetime necessitates we maintain within the United States strong, combat-ready forces and the capability to deploy these forces quickly. The existence of this deployment capability can provide a significant element of deterrence to Soviet military adventurism and serve to bolster friendly governments that otherwise might be subjected to political or military pressure.

OVERVIEW OF MAC MISSION

MAC's primary mission is to project our Nation's rapid response forces to all corners of the globe where our security interests may be threatened. This involves moving fighting forces and their equipment from the United States to staging bases around the world and sustaining them through an air resupply channel. We also must operate within the theater—getting our forces to the battle areas and sustaining them in combat. Additionally, we are responsible for Air Force special operations and aerospace rescue and recovery forces, Air Weather Service (AWS) and Aerospace Audiovisual Service (AAVS).

Airlift forces

Our C-5 and C-141 aircraft and their active and associate reserve crews provide this Nation's primary intertheater airlift capability. During contingencies we also reply heavily on the Civil Reserve Air Fleet (CRAF) to augment our organic forces. The C-130 aircraft and crews from active and Air Reserve Forces perform our intratheater airlift mission. Additionally, our airlift forces provide a worldwide aeromedical evacuation capability. The C-9 primarily performs this vital mission for the Department of Defense; however, both our C-141 and C-130 aircraft are equipped for this mission and routinely augment the C-9.

Special operations forces

On March 1, 1983, the Aerospace Rescue and Recovery Service (ARRS) and United States Air Force special operations forces were consolidated under MAC in recognition of inherent aircraft and mission similarities. This alignment will realize economies and unity of effort in the manning, training, and equipping of these critical forces; will improve our contingency capability; and will increase our readiness. By bringing together all of the special purpose C-130's and helicopters, we enhanced our ability to provide immediate capability to special operations taskings and gained significant potential for increased capability in the future. While there are still specific needs in this area, the consolidation will improve an already effective force.

Aerospace rescue and recovery service

The primary mission of ARRS is the combat rescue and recovery of downed aircrew members from enemy territory. In addition to this combat mission, ARRS supports the intercontinental ballistic missile forces, the Space Shuttle, and atmospheric sampling and provides invaluable weather reconnaissance by locating and tracking the position of hurricanes, typhoons, and severe storms. Rescue's utility is further exercised in peacetime search and rescue as the single federal agency responsible for coordination of search and rescue in the inland region of the United States. As a result of this capability, 488 military and civilian lives were saved during 1982.

Air weather service

AWS provides environmental support to the Air Force, the Army, designated unified and specified commands, and other agencies as directed. During peacetime, AWS support is essential for protection of military personnel and equipment from severe weather, for safe and efficient air and ground operations, for realistic and productive training exercises, and for research and development of effective weapon systems. During contingencies and wartime, weather service is a vital part of the decision process in the deployment, employment, and redeployment of air and ground forces.

Aerospace audiovisual service

AAVS supports war and peacetime audiovisual requirements of the Air Force and other Department of Defense agencies. Motion picture has served us well in the past as our primary documentation medium, but the equipment and photo labs are costly to maintain and are reaching obsolescence. We wish to take advantage of the technological advancements in video recording, which make it the most practical and economic medium for the future. Procurement of lightweight, portable television equipment, recorders, and processing equipment to support video documentation will allow AAVS to meet their requirements most efficiently.

AIRLIFT FORCE POSTURE

Your support for airlift programs last year will go a long way toward improving our capabilities. We thank you for that support. Yet, in spite of the enhancement programs which the Congress has supported, we continue to find ourselves in an unbalanced posture in which our mobility forces are inadequate to meet the deployment needs of our combat forces.

In recent years, American combat forces have been developed, procured, and fielded without the mobility resources necessary for their effective deployment and employment. This deficiency is clearly described in the Congressionally Mandated Mobility Study (CMMS) prepared by the DOD and submitted to the Congress in 1981. We must continue to address this problem diligently if we are to attain the goals prescribed by the CMMS.

Requirements and shortfalls

The CMMS recommends a 25 million ton-mile per day (MTM/D) increase in our Nation's overall airlift capability, of which at least 10 MTM/D should be in the outsize cargo category. The term "outsize" describes items of air-transportable cargo which, by virtue of large size, will not fit in our C–141s and C–130s. At present, outsize cargo can be accommodated only by the C–5. Examples include many large and heavy items integral to the Army's fighting ability, such as armored vehicles, self-propelled artillery, and helicopters. It is significant that, in spite of ongoing efforts to reduce the size and weight of their equipment, the total fraction of outsize equipment in the Army is expected to increase during the 1980's.

Progress toward CMMS goal

The DOD has formalized the CMMS-recommended intertheater airlift capability goal of 66 MTM/D in this year's Defense Guidance.

FY 83 PROGRAMMED AIRLIFT CAPABILITY
VS
CMMS REQUIREMENT

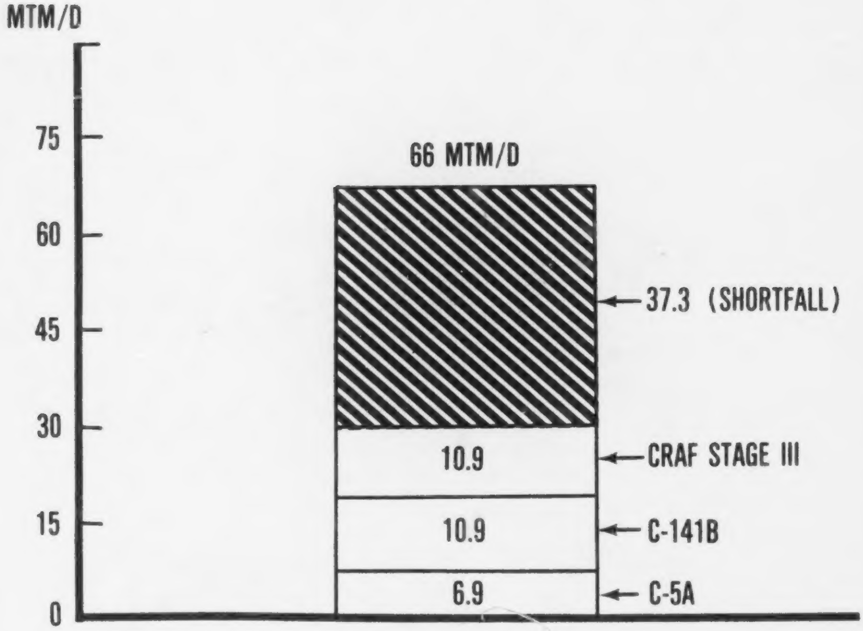

FIGURE 1

Figure 1 depicts the fiscal year 1983 MTM/D baseline capability. Completion of the C-141 stretch modification made a significant contribution to this baseline. The current program to replace the C-5A wing will also help and will preserve a unique national asset—outsize airlift capability.

FY 88 PROGRAMMED AIRLIFT CAPABILITY
VS
CMMS REQUIREMENT

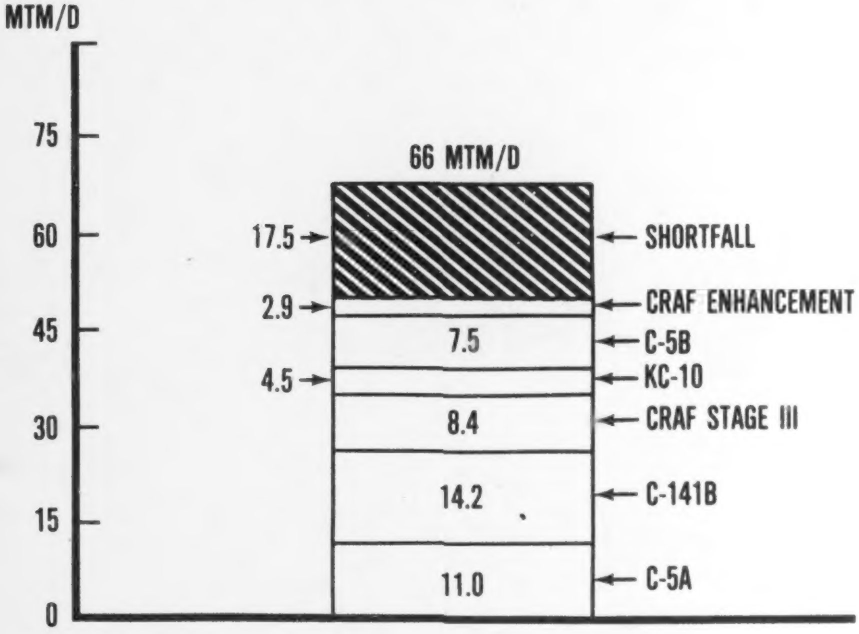

FIGURE 2

The fiscal year 1988 projected capability (figure 2) assumes a full spares inventory for the C-5, C-141, and the use of newly acquired KC-10s in a mobility role. Figure 2 also reflects our concerns about uncertainties in the airline industry. Economic pressures are forcing the sale or retirement of existing cargo-capable aircraft and causing a decline in the number of wide-body and narrow-body aircraft available for defense use. Another important factor between our 1983 and 1988 capability is a revitalized CRAF enhancement program. The CRAF enhancement program will modify passenger aircraft so they have the capability of carrying bulk and oversized cargo if needed. The procurement of 50 C-5B aircraft will further reduce the intertheater airlift shortfall in the near term, and I continue to support the buy of these outsize-capable airlifters. Despite their combined contributions, these programs still leave us short of our goal. Consequently, we must continue efforts to alleviate the remaining intertheater airlift shortfall with a technologically advanced and more capable aircraft—the C-17.

IMPROVING OUR AIRLIFT CAPABILITY

We are making improvements in our overall capability because of programs the Congress supported and funded last year. But while these improvements will make us more capable and ready, much remains to be done. The following areas need special attention this year.

Personnel

My primary concern continues to be the retention of quality personnel. The favorable, though fragile, retention posture we now enjoy is a result of the increasing support shown by the Congress, the Administration, and the public for military members. The return to virtual pay comparability 2 years ago has been a major part of this support. Last year we experienced improvements in every enlisted category. Our first- and second-term reenlistment rates, for example, improved an average of 10.5 percent. Officer retention rates also continued to improve last year with pilot and navigator rates increasing an average of 10 percent and support officer rates increasing 3 percent.

These improvements must be viewed cautiously, however, because there are still problems in some critical, skill areas. Manning in the enlisted maintenance skill, which directly produces our wartime capability, is currently at 87 percent—a shortage of 1738 mid-level noncommissioned officers. The selective reenlistment bonuses have been particularly helpful in easing the shortages in this and other areas.

We need to build on currently improving trends to retain skilled manpower over the long term. Pay comparability is an integral part of this effort. Secondly, out-of-pocket expenses continue to burden our members when they are required to move. Fairness dictates that this burden be alleviated by the government assuming the responsibility for essential moving costs. Thirdly, legislation is needed to extend the GI bill's expiration date of December 31, 1989. A transferability clause which allowed a member's dependents to use the authorized benefits would be a great boom to retention. Finally, it is important to maintain the integrity of the present retirement system. There is no retention incentive that approaches the effectiveness of that system. In addition, it is a primary tool used to manage our force structure. It provides the legitimate basis for our mobilization plans and ensures that a large, standing pool of skilled, experienced people are available to meet wartime requirements.

Spares

A year ago we anticipated full funding in fiscal year 1982 for our major weapon systems peacetime operating stocks (POS) and war readiness spares kit (WRSK)/base-level self-sufficiency spares (BLSS) requirements. However, the POS requirements growth, which was revealed to us late in the fiscal year, resulted in far less than full spares funding. POS and WRSK/BLSS were funded at 81 percent for the C-5, 67 percent for the C-141, 90 percent for the C-130, and 97 percent for our helicopters. The expected fiscal year 1983 funds allocation will not significantly improve this situation. The historical underfunding of POS, WRSK/BLSS, and other war reserve material restricts our current ability to meet wartime objective utilization rates.

Because of the long lead time for spare parts, it will be at least fiscal year 1986 for the C-5 and fiscal 1988 for the C-141 before improved fiscal year 1984/85 funding could possibly correct our spares deficit. Full spares funding is essential to improving our readiness.

C-17

The C-17 promises to be a versatile aircraft that meets a growing requirement. It will be capable of rapid, intertheater delivery of troops and all categories of cargo, including outsize, directly to foward bases in the deployment theater. Because its advanced design will permit operation from small, relatively austere airfields and on short, narrow runways, it concurrently will have the capability to perform the intratheater airlift mission. Thus, this aircraft will provide a replacement for the overage portion of the C-130 fleet and some of our high-time C-141s as they reach the end of their service life in the decade of the 1990's. Ultimately, the C-17 will provide a replacement for all C-141 aircraft.

Operational C-17 capability will be needed no later than the early 1990's. Research and development funding is needed to support timely procurement phased after the peak funding years for the C-5B. I urge your support for this critically needed airlift program.

C-130

The C-130 is becoming a legend. It is an outstanding aircraft and the workhorse of our tactical airlift force. The C-130 design is more than 30 years old, and 60 percent of our active and reserve aircraft are already more than 20 years old. Increasingly, they are experiencing problems associated with their age and the hard use they experienced in southeast Asia. Efforts to maintain the structural integrity and update avionic systems on these aircraft must continue to be funded. The C-130 outer wing replacement, currently under contract, will correct wing fatigue problems and extend the aircraft's useful life. We are installing new station-keeping equipment in our C-130s to improve formation airdrop capability in adverse weather conditions. An inertial navigation system with a doppler interface will also be installed on our C-130s to permit them to effectively operate at low level using terrain masking tactics to avoid known ground threats. These programs will preserve the C-130 as a useful, combat-worthy aircraft for its remaining service life.

CRAF enhancement

The objective of a CRAF enhancement program is to obtain additional oversize cargo airlift capability for DOD emergency use through the modification of civil aircraft. A CRAF enhancement program would modify civil wide-body aircraft to provide approximately 3 million ton-miles of additional cargo capacity. After the last request for proposal was allowed to expire in January 1982, MAC was given a charter to review the program with members of the civil aviation industry. The review sought a program that would be acceptable to the carrier, DOD, and the Congress. Following that review, several different concepts (some involving leasing) were developed and have been undergoing extensive analysis. We are comparing these new options to the traditional enhancement program with the view to select the one most cost-effective, yet realistically acceptable to the airline industry. We are requesting funds in fiscal year 1984 to modify three aircraft. CRAF enhancement is the least expensive way of increasing our airlift capability. I urge your support of this program.

Command and control

A crucial element in making effective use of our airlift forces is a reliable, flexible, and responsive command and control system. Our present system uses 1950's technology and is inadequate to respond effectively to time-sensitive, geographically diverse airlift requirements.

Our command and control system is currently undergoing a long overdue upgrade. We are replacing old, outdated high-frequency radios with new Air Force standard systems that will serve as the backbone of our command and control network and will be able to incorporate an anti jam capability in the future. In the satellite communications area, we are procuring terminals that can be used in the air or on the ground for worldwide command and control of MAC aircraft employed in crisis or contingency operation. We are also procuring jam resistant secure communication terminals that will allow us to be more responsive to the national command authorities and the supported commanders in chief.

Rescue and recovery

To satisfy the critical shortfall in combat rescue and special operations vertical lift capability, we are procuring the HH-60D Night Hawk. The HH-60D combines proven UH-60A reliability with state-of-the-art avionics to provide the night, adverse weather, low-level capability required for survival and successful mission completion in medium- to high-threat areas. During 1982, we accepted the first five of nine UH-60A Black Hawks. These proven combat-capable airframes, though not designed for low-level, night, adverse-weather operations, will provide a lead-in to the HH-60D and help satisfy a shortage of combat rescue and special operations aircraft in the near term.

Other programs

Three other airlift programs being pursued merit your support for the efficiencies and economies they will provide. First, the C-140B is fuel inefficient, costly to maintain, range and payload limited, and does not have a secure communication capability. We are responding to Congressional direction to replace these aircraft. Second, the CT-39 fleet is at the end of its economic service life and has many operational deficiencies. We are proceeding, as authorized by the Congress, with the multiyear lease of operational support aircraft—the CT-39's replacement. New aircraft can be leased for less than the cost of operating and maintaining the CT-39 fleet. Third, and separate from the C-140B replacement and CT-39 replacement, is a program to acquire aircraft for a European Distribution System—an assured logistics system designed to enhance the combat capability of USAF forces in the European theater. A system of this nature will speed delivery of fighter parts, increase the number of mission-capable fighter aircraft, and save up to $470M in additional spares stocks. Continued support of the EDS aircraft is an inexpensive way to increase significantly the Nation's war-fighting capability.

Last year Congress supported the readiness needs of our weather support forces. Weather sensing systems, equipment for receiving and processing satellite data, communications trunks to overseas weather centers, and overseas weather intercept sites are all being upgraded. Continued funding support is needed for the Defense

Meteorological Satellite Program (DMSP). This program provides the only assured means of obtaining critical weather data worldwide, during contingency and wartime operations. This year's requested DMSP funding provides for multiyear procurement to help insure a fully operational DMSP capability beginning in the mid-1980's.

CONCLUSION

The challenges facing our Nation are many and varied. As America moves forward into the mid-1980's and beyond, MAC will remain dedicated to the defense of our national interests through the provision of airlift and support capabilities essential to the worldwide projection of our forces. Your continued support of our mission and required airlift improvements will enable us to meet the challenge.

Senator COHEN. I will defer questions until General Skantze makes his presentation.

STATEMENT OF LT. GEN. LAWRENCE A. SKANTZE, U.S. AIR FORCE, DEPUTY CHIEF OF STAFF, RESEARCH, DEVELOPMENT AND ACQUISITION

General SKANTZE. Yes, Mr. Chairman.

With your permission, I will submit my formal statement for the record and state a few comments on the highlights and current status of our program.

As General Allen has pointed out, the airlift acquisition program was integrated into an overall plan to meet the required capability level in an expeditious and fiscally responsible manner.

Initial increase in our capability is being provided by the KC-10. This effort is well established and on a multiyear basis. We have delivered 12 aircraft thus far with a total of 6 more to be delivered during fiscal 1983. This fiscal 1984 request will add eight more KC-10's to the inventory.

The C-5B program went under contract in December with the first delivery scheduled for December 1985. The fiscal 1984 request will procure 4 additional aircraft toward an ultimate goal of 50 by 1987.

In addition, the fiscal year 1984 budget R&D funding will continue the C-17 program, allowing it to follow immediately after the C-5B. This will fulfill the shortfalls remaining upon completion of the C-5B and the KC-10 program providing key aspects of our overall airlift plan.

The C-17 will give us an outsize intratheater capability and will serve as potential replacement for the C-130A and C-141. The program went on contract in fiscal 1982 and significant progress has been made in verifying the C-17 design through wind tunnel testing.

A vital aspect of our ability to project and sustain tactical air power is the goal of our combat rescue forces, ability to recover down crews is integral to their efficiency and combat readiness. Without the HH-60D we will not have the combat rescue capability to support our tactical forces. The HH-60D program went on contract in October 1982 and the first aircraft delivery is scheduled for 1987.

The fiscal 1984 request provides funds to continue the development program as well as advanced buy funding for the first aircraft.

In addition to these programs, I am prepared to answer your questions on the C-140 replacement program and the program to lease a replacement for our aging CT-39 fleet.

This concludes my remarks. I will be happy to answer your questions.

[The prepared statement of General Skantze follows:]

PREPARED STATEMENT OF LT. GEN. LAWRENCE A. SKANTZE, DEPUTY CHIEF OF STAFF, RESEARCH, DEVELOPMENT AND ACQUISITION HEADQUARTERS, U.S. AIR FORCE

AIRLIFT

Mr. Chairman and members of the committee, I am pleased to appear today to discuss the Research, Development and Procurement strategy which we are following to address the requirements as stated by General Allen, the Commander in Chief of the Military Airlift Command.

As General Allen has stated, airlift is the most visible, responsive, and flexible element of our military resources. Its primary role is to project and sustain combat forces in a crisis or battle area until other means of transportation can deliver the required follow-on support. In many situations, airlift is the only means of responding rapidly, either because of the geographic location or the speed with which the threat develops. In these situations, airlift brings the forces to bear which could be decisive in the early days of a conflict.

The existing airlift force continues to have serious inadequacies in its capabilities to meet the mobility requirements of our conventional war strategy. The Air Force's RDT&E and Procurement strategy remains committed to correcting this airlift shortfall. We have programs under way to improve the readiness, sustainability and capabilities of our current airlift aircraft. These programs include increasing spare parts stocks and crew ratios to permit higher utilization rates of our C-5 and C-141 aircraft, increased aerial port personnel and airlift support equipment, and upgrade of the Military Airlift Command (MAC) C^3 system. The C-5A wing modification will extend the lifetime of this system by adding 30,000 hours to the wing's lifetime. The first C-5A aircraft entered the modification line in February 1982 and 26 aircraft will be completed by the end of fiscal year 1984. The remaining aircraft are scheduled to be completed by fiscal year 1987.

Another of our problems has been the chronic and significant shortfall in our capability for long-range airlift of oversize and bulk cargo. The C-141 stretch program, which extended the fuselage and added an air refueling receptacle, increased the C-141's average payload by some 30 percent. This modification was recently completed in 1982. Fiscal year 1984 funds for the C-141 will continue needed improvements in several on-board systems such as station keeping equipment, which enables us to deploy and employ a light army brigade size force in adverse weather. However, even after we have completed the enhancements planned for the existing force, we will still have serious shortfalls in our capability for intertheater airlift of outsize, oversize, and bulk cargo.

Compounding these intertheater shortfalls are the inadequacies of our intratheater distribution systems. We continue to have a need for intratheater mobility and resupply. The current backbone of our intratheater airlift force is the C-130. Therefore, we are requesting fiscal year 1984 funds to continue modifications which will ensure the continued safe operation of this aircraft.

For the near term, we are procuring additional KC-10s and the C-5B to provide substantial improvement to the U.S. defense mobility posture. Since the KC-10 and the C-5A aircraft are in the Air Force inventory, existing training and support elements will allow the new KC-10 and C-5B aircraft to transition quickly to operational status.

The air-refuelable C-5 has an intercontinental range and can carry all the major firepower and equipment items of our modernized ground forces. It is the only aircraft presently capable of transporting key outsize firepower equipment needed by the Army and Marine Corps to respond to worldwide contingencies. Our in-service fleet of 77 aircraft is not adequate to meet these outsize cargo needs. We plan to increase the C-5 force to 127 aircraft by procuring 50 C-5Bs through fiscal year 1987. The C-5B will be the original C-5 design, updated with all currently approved engineering change proposals—a 30,000 hour service life wing, modernized TF39-1C engines, improved avionics, and more durable and corrosion resistant aluminum alloys.

By acquiring C-5Bs, we will be able to begin promptly to correct the serious intertheater shortfall in our outsize cargo airlift capability by improving our ability to transport large volume, heavy weight cargo over intercontinental distances. Acquisition of C-5Bs will enhance our ability to rapidly project combat forces worldwide. With no R&D required and with an existing production base, we will be able to begin to field C-5Bs in the mid-1980s.

Along with airlift, aerial refueling is essential to successful deployment operations. We are planning a force of 72 KC-10A's and will complete procurement by fiscal year 1988. The KC-10As will greatly improve the Air Force capability to support contingency operations, reduce our dependence on foreign bases, and enhance our capability for the rapid deployment of combat forces. Airlifter cargo loads can be greatly increased and delivery times to the destination reduced through use of the KC-10A because of its large fuel offload and long range capabilities. The KC-10A also can carry considerable amounts of cargo. In addition, the KC-10A will make more KC-135 tankers available to support the strategic bomber force. KC-10A aircraft are being procured using a multiyear procurement contract which provides substantially lower prices than those on comparable commercial sales.

For the long term,. the C-17 is a key element in the Air Force's program to redress our airlift shortfalls, especially in the areas of outsize firepower/equipment and intratheater airlift. This simple, rugged, reliable airlifter will incorporate low risk technology to provide long haul efficiency, as well as safe and routine operations into small austere airfields. The air-refuelable C-17 will have the capability to carry all types of air cargo over intercontinental distance, as well as the ability to operate directly into and out of the small, austere airfield environment typical of contingency areas around the world. It will provide a full spectrum of delivery modes: airland, airdrop (including outsize), low altitude parachute extraction (including outsize), and rapid/combat offload.

The C-17 is the capstone of the airlift improvement program. It is planned to provide three vitally needed capabilities: (1) it contributes to the completion of the recommended increase in intertheater outsize airlift capability stated in the Congressionally Mandated Mobility Study; (2) it provides the theater commander with outsize intratheater capability; and (3) it provides a candidate for replacing same C-130s and eventually the C-141 force. In addition, the C-17 will be a highly efficient intertheater airlifter designed to complement the existing force. The Air Force request for fiscal year 1984 continues the prudently paced development program leading to a planned full scale development in fiscal year 1985.

Other key mobility programs include the CT-39 Replacement, the European Distribution System Aircraft (EDSA), Combat Helicopter Modernization, Joint Services Vertical Lift Aircraft Development program (JVX), and C-140 replacement.

The CT-39 program addresses the need to replace the existing fleet because of aircraft aged and escalating maintenance costs. Airlift's wartime mission is to ferry essential personnel and cargo throughout the United States and other parts of the world. In peacetime, the aircraft is used to provide pilot seasoning and, as a by-product of that basis. In fiscal year 1984, we will continue the CT-39 replacement multiyear lease contract, under which the government will provide fuel and pilots and the contractor the required maintenance and support.

Our European Distribution system (EDS) is a program to ensure wartime distribution of critical spares and aircraft engines in the European theater to enhance readiness and sustainability. The EDS program consists of three elements: logistics C^3, forward stockage of spares in Europe, and the EDSA— the aircraft to provide reliable air transportation of critical spares and aircraft engines. Our procurement program supports this last element and includes plans for 18 small, off-the-shelf commercial cargo aircraft. Our fiscal year 1984 request procures the last sixteen EDS aircraft.

Our Combat Helicopter Modernization program addresses the urgent need to modernize the Air Force's Combat Rescue and Special operations Forces to cope with increasing threats and to overcome severe maintenance problems resulting from obsolete equipment. We are devloping a derivative of the Army UH-60 Black Hawk— a helicopter of proven reliability, maintainability, and survivability. Using the basic H-60, we are integrating improved avionics for precision low-level navigation at night and in adverse weather, adding an auxiliary fuel tank, incorporating an air refueling capability, and installing other necessary Air Force mission equipment. The fiscal year 1984 request for this helicopter, which is designated the HH-60D, includes funds for research and development and advance buy funding in procurement. The HH-60D will be operational in the active force, the Air Force Reserve, and the Air National Guard.

The JVX program is a DOD initiative to develop a common DOD vertical take-off and landing (VTOL) vehicle for multiservice use. The executive agent for the program is the Army, and the program manager is assigned from the Marine Corps. Air Force applications include combat rescue and special operational in conjunction with the HH-60D. The program will take advantage of demonstrated tilt-rotor technology and promises to reduce total DOD costs through a common development program.

The Air Force has 11 C-140B aircraft which are used to transport high ranking government officials and foreign dignitaries in the United States and Europe. The replacement program includes two range requirements: one for coast-to-coast range (2200 NM) and the other for a medium range (1400 NM), with both able to carry 14 passengers. We have structured a competitive program to include both range requirements. The program begins with the lease of two long and one medium range aircraft in fiscal year 1983. Fiscal year 1984 funds will continue the lease of these aircraft with procurement planned to begin in fiscal year 1985.

Senator **COHEN**. Is that screen here for any particular reason?

General **SKANTZE**. I have backup charts which I can use if you want to look at them.

C-17

Senator **COHEN**. Let me turn initially to the C-17.

General Allen, I think you said that you want to maintain the C-17 as a viable program. I am looking at the funding profile of the C-17. Out of the fiscal year 1984-85 in terms of dollars you have $26 million, roughly, in the 1984 and $32 million in 1985.

Without being too demeaning about it, it seems to be a dwindling type of program for the C-17, it is barely a life support system you have this program on. You talk about that being viable. That is the lowest level. I am not even sure that is life sustaining at that level.

Tell me how you see that as being viable.

General **ALLEN**. I agree with you, Mr. Chairman, and I have recommended a somewhat higher level of viability. I think that is a result of the program which was put together last year, prior to the time that the Congress appropriated the additional $60 million.

DOD right now has under active consideration, to my knowledge, what adjustments, if any, might be appropriate to recommend for that program. I personally have recommended using the $60 million appropriated for fiscal year 1983 in fiscal year 1983, increasing that to something in the neighborhood of $100 million in fiscal year 1984.

C-5B

That would require some reprograming action. This would be followed by $150 million in fiscal year 1985, something on the order of $200 to $300 million in fiscal year 1986; 1986 is the peak funding year for the C-5B procurement. I don't think the budget in fiscal year 1986 would accommodate more than $300 million on top of that peak funding for the C-5B.

Subsequently the C-5B funding drops off rather sharply for the next 2 years, enabling more money to be allocated for the C-17. The sort of schedule which I have outlined would provide an initial operational capability for the C-17 in 1992.

Senator **COHEN**. Has the Air Force come to the conclusion that the C-17 is going to be a replacement of the C-130's and C-141's?

General **Allen**. I think clearly there is a total consensus within the Air Force that the C–17 initially would replace the older C-130's and the older C–141's, allowing one to phase the lower time C–141's into the Guard and Reserve where the utilization rate is somewhat lower. This would preserve their life considerably compared to keeping them in the Active Force.

General **Skantze**. Senator, if I might comment on the $60 million, the Air Force did prepare a reprograming request, as General Allen points out, to take advantage of $60 million which provides for reasonable ramp up in 1984 in the order of $100 million and that request was forwarded to the Department of Defense. They have not chosen to act on it at this point.

Senator **Cohen**. In other words, if you really want to make a viable program, the ramp up cost would be so large that you might lose the program altogether at this point?

General **Skantze**. I don't think we have that view at this point. We thought we were still laying out a program headed toward a full development start in 1985 to provide initial deliveries at the end of the C–5 deliveries. We thought that was a reasonable way to lay that program in and dovetail it in to make up the remaining shortfall.

CRAF ENHANCEMENT PROGRAM

Senator **Cohen**. Has there been any consideration given to taking money out of the CRAF enhancement program and putting it in the C–17 R&D program?

General **Allen**. We looked at the possibility of using a very modest amount, actually the fiscal year 1981 appropriation for CRAF enhancement, in order to support the ramp up in 1984. I think that was a total of $37.1 million. That is the only such consideration that has come to my attention.

Senator **Cohen**. Should Congress give any consideration to reducing funds for the CRAF program?

General **Allen**. My recommendation, Mr. Chairman, would be absolutely not. I think the CRAF enhancement program is terribly important to us. It is the cheapest way of quickly adding to the airlift capability that we have, and it is the quickest way of maintaining significant airlift capability at a reduced price.

I think that is a very high priority element of the overall airlift program. I would hate very much to see that reduced.

Senator **Cohen**. How quickly do you expect to have a contract award for the CRAF program?

General **Allen**. Let me explain a bit of what has been going on in the last 6 or 7 months on that issue.

As you know, we went out with an RFP a little over a year ago. The responses that came back in were somewhat disappointing because they involved less capable aircraft at a fairly high price. The decision was made not to avail ourselves of those aircraft at that price.

Subsequent to that, after discussions with personnel in the Office of the Secretary of Defense, the Air Staff, and the Secretary of the Air Force, I personally visited a number of the chief executive officers of the airlines, Pan American, TWA, American, Flying Tigers, and Trans-America, and discussed the CRAF program with them.

I also visited the Boeing Co. to discuss modification costs. We already had good cost data from McDonnell Douglas. I was assured of full cooperation by all concerned.

There is a great interest in the airline industry for a viable CRAF enhancement program. There is interest to the extent that three of the carriers have hired a special team to help them deal with the CRAF enhancement program and to encourage DOD to get on with it.

Now, one of the things that came up during those discussions was the possible opportunity of leveraging our investment through a leasing arrangement. There are many variations of these leasing type arrangements.

One of them, very simply, would be to create a civilian trust company that would buy the airplanes from the airlines, modify them, and lease them to the Air Force. The Air Force would then lease them back to the airlines. In essence, we would be paying the cost of that over a period of time rather than all at once, and we could get more airplanes quicker.

We found some difficulties with that particular approach. We looked at several other approaches. There is one approach that we are still investigating. Nonetheless, we anticipate having an RFP ready to go probably by mid- or late-summer of this year, if not a little bit sooner than that, and entering into a contract sometime this fall.

There is interest and enthusiasm within the airline industry for it. There is certainly enthusiasm within the Air Force and DOD for it. It is a question of determining how we can get the most for the Government's money.

KC–10A

Senator **Cohen**. General Skantze, in your prepared statement you indicate we are planning a force of 72 KC–10A's. When, and for what reason, was there a decision made to add 12 aircraft to the previous procurement objective?

General **Skantze**. That was an outyear force planning exercise. It was done in the past year.

Senator **Cohen**. For what reason?

General **Skantze**. I would like to submit something for the record.

Senator **Cohen**. Do you propose adding those 12 KC–10A's in the multiprocurement program?

General **Skantze**. Not necessarily. They are being looked at in the current 1985 POM exercise. We have not approached that point of decision yet.

Senator **Cohen**. My understanding is that $34.8 of the $144.8 million was provided for the procurement of three commercial wide bodied aircraft is going to require a reprograming request.

When do you expect to send that up to Congress?

General **Skantze**. That, too, is under consideration at OSD at this point. What we are doing in that area is working out the business strategy for the procurement of those wide bodied aircraft. That money is presently under consideration in OSD.

Senator Cohen. Is this reprograming to require any offsetting action?

General Skantze. I can't answer that. I will have to submit that for the record.

[The information follows:]

REPROGRAMING REQUEST

The Air Force review of the fiscal year 1983 Appropriation and Authorization Acts indicates that a reprograming request is not required in this instance. The fiscal year 1983 DOD Appropriation Act (Public Law 97-377) appropriated $94.8 million, and added $50.0 million from prior year Aircraft Procurement, Air Force funds for a total of $144.8 million for procurement of three commercial wide-bodied cargo aircraft. The fiscal year 1983 DOD Authorization Act (Public Law 97-252) authorized $60.0 million and reauthorized $84.8 million prior year authorization from the Civil Reserve Air Fleet (CRAF) program for the same purpose. As a result of these actions, $144.8 million is both authorized and appropriated.

Senator Cohen. Has Senator Jackson been in touch with you in terms of this request?

General Skantze. He has been in touch with a little higher up.

Senator Cohen. I yield to Senator Nunn.

Senator Nunn. Thank you, Mr. Chairman.

General Allen, what are the current personnel levels in MAC and also for the record what were they in fiscal years 1980, 1981, 1982, and 1983? What are your current personnel levels now?

General Allen. In the enlisted force we are just about 100 percent manned. It depends on which specialty you are talking about.

Senator Nunn. What I really mean is the overall numbers. How many active duty Air Force people are assigned to your command?

General Allen. 87,000. We just took over responsibility for the special operations forces which are about another 7,000. About 94,000 people.

Senator Nunn. That is military uniformed people?

General Allen. That is military and civilian. We have relatively few civilians as compared with some other commands.

Senator Nunn. Can you break that down for the record and give us the number of civilians and military and go back to 1981, 1982, 1983, so that we have a 5-year plan?

General Allen. I will be happy to.

Senator Nunn. The next question is what are the planned levels for fiscal year 1984 and for the 5-year plan after that?

General Allen. I will supply that for the record.

[The information follows:]

MANNING LEVELS IN THE MILITARY AIRLIFT COMMAND

General Allen. As of 1 March 1983, there were 94,274 people assigned to the Military Airlift Command. This was comprised of 12,563 officers, 65,106 airmen, and 16,605 civilians. The following table illustrates what our assigned personnel levels were beginning in fiscal year 1980 and what the projected authorizations are through fiscal year 1988:

	Officer	Airmen	Civilian	Total
Fiscal year:				
1980	11,937	58,990	16,612	87,539
1981	11,890	60,191	16,171	88,252

	Officer	Airmen	Civilian	Total
1982	11,951	61,425	15,975	89,351
1983 [1]	12,721	64,432	16,847	94,000
1984 [1]	12,849	65,255	16,839	94,943
1985 [1]	12,946	66,185	16,822	95,953
1986 [1]	13,085	66,846	16,542	96,473
1987 [1]	13,283	68,064	16,568	97,915
1988 [1]	13,572	69,945	16,735	100,252

[1] Projected authorizations.

We plan to begin increasing our active duty manning levels in fiscal year 1985 to meet the procurement of the C-5B. The projected figures listed above include these increases. As can be seen, the addition of the C-5B to MAC's inventory is the primary factor for the need to add to our future personnel levels. Presently, there are no requirements to increase our manning authorizations due to any C-141 programs.

General ALLEN. It is a slight increase. We increase, incidental to the C-5B procurement, by over 6,000 people to take care of those additional C-5B's.

Senator NUNN. Are those mainly military people?

General ALLEN. Mainly military.

Senator NUNN. What type people are those? Are they skilled enlisted personnel or pilots, navigators? What are they?

General ALLEN. To a large degree they are maintenance people associated with the C-5B. They are also aircrews, of course.

We would anticipate helping ourselves in that area by means of the associate capabilities reserve in the same way we do with the present C-5's and C-141's. Our capability to operate those airplanes in an emergency would be enhanced by use of those reserve personnel.

Some of them have to be base operating support personnel to take care of the additional maintenance and aircrew personnel.

Senator NUNN. If you could furnish for the record the plan for increases over the next 5 years relating to both the C-5 program and the C-141 program.

General ALLEN. I will be happy to.

Senator NUNN. And the breakdown in skills.

General ALLEN. Yes.

[The information follows:]

C-5B MANPOWER PROJECTIONS

The following are the projected skills necessary to support the complete C-5B procurement of 50 aircraft by fiscal year 1989.

	Military	Civilian
Crews	664	
Crew training	75	
Maintenance	2,616	318
Wing/base staff	82	2
Weapon system security	84	
Support	300	174
Total	3,821	494

In addition to this 4,315 active force increase, the Reserve Association will increase by 1,873 military and 364 civilian positions. The reserve manpower increases are for crews and maintenance. The civilians are mainly Air Reserve Technicians who are also military reservists.

Presently, there are no requirements to increase our manning authorizations due to any C-141 programs.

USE OF RESERVES

Senator NUNN. Are you planning to maximize the use of reserves in moving into these two programs?

General ALLEN. Absolutely.

Senator NUNN. Your use of the reserve thus far in the overall Military Aircraft Command has been very positive, has it not?

General ALLEN. It has been very positive. They provide a great contribution to our overall capability. For example, in our C-141 force today, about 48 percent of our aircrews and about 40 percent of our maintenance personnel are reserve. In the C-5 force, we are building to 50 percent in the aircrew force. We won't get there for 2 or 3 more years.

It is about 40 percent of the maintenance force today in the C-5's. In the C-130 force, the Guard and Reserve have about 59 percent of our total capability. I would underscore not only their importance, but their skill at doing their job. They are very good.

Senator NUNN. When I say Reserve, I am speaking of Reserve with a capital, including Guard and Reserve.

General ALLEN. I am talking about Guard and Reserve, that is right.

Senator NUNN. If we could have that for the record. I am particularly anxious for us to maximize the use of the Reserve in these programs and particularly the add-ons, if we possibly can. I am delighted to hear that you feel the same way about it.

General ALLEN. I will say also, Senator Nunn, that before you came in, I was mentioning that part of our long-term program for the C-17 enables us to move C-141's into the Guard and Reserve.

Senator NUNN. On the subject of the C-17 what is your estimate now for the completion of the development of the C-17? Do you have firm figures or is it pretty much in the estimate stage?

General ALLEN. I guess it depends to whom you talk. The program which I have recommended would provide an IOC in 1992.

Senator NUNN. What about the number of planes and the total program costs as you see it now?

General ALLEN. My judgment is that you are going to build a large quantity of C-17's before you are finished. By large quantity, I think you will probably still be building them in the year 2005 and maybe subsequent to that.

When you think in terms of long-term replacement for the C-141 fleet and a large proportion of the C-130 fleet, you are talking about a large quantity of airplanes. Of course, the total cost of it depends on when you stop building them.

Senator WILSON. Did you say still in the year 2000?

General ALLEN. Yes; without any question.

Senator NUNN. Let me break it down then. What would be the remaining development cost before you go into production, research and development and costs that have not thus far been incurred?

Let me give you two questions. For the record, how much is now being incurred?

Second, how much do you anticipate will be incurred between now and the time we actually make a production decision on the C–17?

General **Skantze**. I think we have approximately $32 million which we put on contract in September of last year. That was to carry them for 18 months and it includes low level verification of the design and wind tunnel testing.

As you know, $60 million was appropriated. We made a request to OSD to have $859 million reprogramed to obtain the authorization. That is still under advisement in OSD. The net result is that we don't have any R&D money except $1 million.

In 1984 we have asked for $26.8 million. That is not a real profile. That is what existed in the budget. We fully intend to restructure the program in the 1985 POM. I think that at the time we made the source selection we had firm contract commitments for the program, to include the research and development program and the first two production buys.

I can submit those numbers for the record. I think they are still good ball park estimates of the cost.

Senator **Nunn**. If you would submit those for the record.

[The information follows:]

The current Air Force position on the C–17 is based on a "Most Probable Cost (MPC)" estimate that was performed during C–X source selection. The audited C–17 constant 1980 dollar MPC for the Full Scale Engineering Development Program was $2.438 billion and for a procurement program quantity of 182 aircraft was $12.889 billion. These estimates are based on the production quantity and schedule as contained in the contract.

The program is structured as a moderately paced research and development program followed by a production program timed to phase behind the C–5B. Initial production funding would begin in fiscal year 1987. Under the Air Force program approximately $500M in research and development funds would be expended prior to initiation of the production program. This will virtually eliminate cost and schedule risk associated with program concurrency.

Senator **Nunn**. I have another whole series of detailed questions on the C–17 program. I will furnish that for the record and you can give me back an answer.

What is the status of the C–5 program now?

C–5

General **Allen**. The C–5 program, of course, is on contract. It is just really getting off to a good start, but it is off to a good start according to my understanding.

I would like to say just a word about the C–5A wing modification. We received the first production aircraft back to Military Airlift Command on February 28. That was 24 days ahead of schedule. I am told that the second aircraft also will be ahead of schedule.

The company is going very well with it. They have provided us an airplane that, when it came back from the factory, performed very well. The prototype wing modification airplane, which we have had back now for about 2 years, has about 2,000 hours on it. It is preforming well.

The structural tests which have been completed on the new wing took that wing through four lifetimes, and it held up fine. Then, to simulate battle damage, they actually severed four wing panels and subjected it to heavy loads, and its held up under those. So, we are confident that we have a very, very good and the program in moving fine.

Senator NUNN. That is encouraging.

The new C-5 as opposed to the wing mod, that contract is signed and everthing is underway, is that correct?

General SKANTZE. That is correct.

Senator NUNN. What have you found out about the retooling? Are your original estimates anywhere near correct there?

General SKANTZE. I think so. We looked at that proposal from the contractor and did our own independent estimate on it. The nonrecurring costs, which were basically production tooling turned out to be close to what we expected and that is spread out over the first 3 years.

Senator NUNN. Would you say then that in the overall contract you have not met any unanticipated cost at this stage or is that too broad a question?

General SKANTZE. We have adjusted the budget slightly lower after negotiation. The wing modification program, which I negotiated back in 1979, looks like it ought to come in under cost.

Senator NUNN. That is good. Very seldom do we have a witness go back and claim they negotiated a contract several years ago. I think that may be my first experience. I am delighted that you have justifiably claimed credit for that. I do think it is awfully important to get these cost estimates in better shape to begin with and not have these overruns. I think we lose a lot of credibility with them on the whole military budget.

General SKANTZE. I also negotiated the B-1B.

Senator NUNN. We will hear from you later on that one.

Senator COHEN. We expect Senator Levin at any moment to come crashing through the door.

Senator NUNN. I hope you are right on that one, too.

One other question and then I will defer to the chairman and Senator Wilson.

When do you anticipate replacing the C-141 fleet based on current usage?

General ALLEN. Based on current usage, we project the C-141 fleet will start phasing out in the mid-1990's. That is based on 45,000 hours service life. The airplane was originally designed for 30,000 hours. Some lifetime enhancement modifications have been made. We think it will be good for 45,000 hours now, which means it will start phasing out in the mid-1990's.

Senator NUNN. When will that phaseout be completed? Maybe you can furnish for the record your anticipated phaseout on that. When will it be completed, roughly?

General ALLEN. If you continue to operate them at the same rate you are operating them right now, and without a C-17 coming in, and I will get to the impact of the C-17 in a moment, that phaseout will take place over a 6- to 8-year period.

If the C-17 becomes available by that time, that will allow us to phase out some of the older airplanes and to move some of the lower time airplanes into the Guard and Reserve where they are not flown at the same utilization rate. It would preserve their lifetime to around the year 2015.

Senator **Nunn**. Thank you, Mr. Chairman, I have a couple more, but I will defer and come back.

Senator **Cohen**. Let me go back to the C-17 a bit.

You are aware, I take it, of the story that appeared in the Boston Globe that indicated that a memo had been given to Secretary Weinberger which he read and approved on March 7 that the C-17 ought to be cut out of the fiscal 1983 budget?

General **Allen**. I read that article this morning. I know of nothing to validate that article. As a matter of fact, I gave a short briefing last week to the Secretary of Defense and the Joint Chiefs of Staff. There was no indication at that time that a decision had been made to cut out the C-17.

I had a discussion with the Deputy Secretary of Defense this morning on the subject and received no such information. I tend to discount that article.

Senator **Cohen**. What about the 747?

General **Allen**. The subject of the 747 did not come up in those discussions and I have no knowledge of any decisions on it.

Senator **Cohen**. Apparently a memo was leaked on the projected military procurement. I have not seen a copy of the memo, only the report that appeared in the Boston Globe. If that memo in fact bears out the Boston Globe's story, where do we stand at that particular point?

General **Allen**. I am not sure I understand the question.

Senator **Cohen**. The question is, what is your understanding of the nature of the commitments by DOD, the Pentagon, to the C-17 program?

General **Allen**. My understanding is that the C-17 program is under active consideration by OSD right now and that a decision has not been made.

Senator **Cohen**. Again, I mention the profile spending for 1984 and 1985 is minimal at best and is designed to keep the subject matter open for discussion, but has nothing to do with an active research and development program.

General **Skantze**. In our deliberations on the 1985 budget in the Air Force we are certainly laying in a C-17 viable program that we intend to fulfill.

Senator **Cohen**. Are you aware of the memo by Lt. Gen. William Richardson, Deputy Chief of Staff for Operations and Plans, formerly in charge of staff operations plan?

General **Allen**. I read about that memo in the newspaper. I might say I subsequently have talked to the Chief of Staff of the Army on the subject of the C-17, and it has his strong support.

Senator **Cohen**. So this memo is discounted then and the Army is now fully in favor.

Does it not say that this particular allegation was that he was tired of the Air Force's C-17 and said that, No. 1, he applauded the action, but you become obsessed with the C-17 which was impinging on other alternative airlift programs?

General **Allen**. I don't deny that that might not have been the author's personal views, but I have ample indications that those are not the views of the Chief of Staff of the Army.

Senator **Cohen**. Senator Wilson?

Senator **Wilson**. Thank you, Mr. Chairman.

LONG-RANGE AIRLIFT ACQUISITION PLAN

I apologize to the general if your statement has already covered this point, but last year Secretary Orr promised Congress and the Service Chiefs as well that there would be developed a long-range airlift acquisition plan.

I just wonder whether or not you have been familiar with that and what the status is?

General **Allen**. I have been working very hard on a long-range airlift acquisition plan, Senator Wilson. As a matter of fact I have alluded to the highlights of that plan in my previous comments about phasein/phaseout of aircraft and C-141's going into the Guard and Reserve.

The final draft of the Military Airlift Command's view of that plan is in my briefcase right now. It has not yet been provided to the air staff or to DOD.

I will be happy to provide any details on it that you might desire, but with the recognition that it is my plan right now. It does not represent Air Force or DOD's views.

Senator **Wilson**. I gather, to pick up a little bit on the line of questioning of Senator Nunn and Chairman Cohen, that your enthusiasm for the C-17 is undimmed notwithstanding the reports?

Specifically, I note in your statement which I have scanned regarding the C-17 you are stating that it will provide replacement for the overage portion of the C-130 fleet and ultimately will provide replacement for all C-141's.

You say operational capability will be needed no later than the early 1990's.

General **Allen**. Not only is my enthusiasm undimmed, Senator Wilson, I will say the more I study the airlift program, and the more I study the airlift requirements for the future, the stronger I feel our Nation's airlift posture must have the C-17.

Senator **Wilson**. I have not seen that article that the chairman alluded to. Is the author of that supposed to be——

General **Allen**. I believe it is someone on the Boston Globe.

Senator **Wilson**. I mean the author of the memo, not the article.

Admittedly this is only a report. It is not verified, but it does occasion concern in light of your own commitments to the C-17.

I would just ask this: Am I not correct in my understanding that the current Air Force posture statement identifies the C-17 as the next generation airlifter?

General **Allen**. It does indeed and the testimonies of the Secretary and Chief of Staff of the Air Force identify in strong terms the C-17 as a strong requirement and they are supporting it strongly.

Senator **Wilson**. Does the posture statement specify precisely when it is to take its place on the stage? It has been spoken of as succeeding the C-5. That raises the question when? After 50 C-5's or when?

General **Allen**. After 50 C-5's. As a matter of fact, two dates have been talked about. Two years, 1991 and 1992, have been the years identified in all the testimony so far this year and last year, with regard to initial operational capability of the C-17.

Senator WILSON. I would be grateful if you would submit to the committee any additional data that supports the position that you have very clearly enunciated here with respect to the C-17 as its next generation airlifter.

General ALLEN. I will be happy to.

[The information follows:]

C-17 AS THE NEXT GENERATION AIRLIFTER

The importance of acquiring the C-17 as this Nation's next generation airlifter is based on the need to increase capability to the minimum goals set by the DOD, to provide a flexible capability to replace the aging C-130 and C-141 aircraft, and to do so within the fiscal constraint which we can realistically anticipate during the next two decades. The C-17 was designed to accomplish the mission of moving modern, war-fighting equipment at the least life cycle cost. This emphasis on reducing the long-range costs of operating and owning a transport aircraft has resulted in a design which offers efficiency and cost savings not available in alternative aircraft. A C-17 squadron, for example, requires 42 percent fewer people to operate and maintain than a C-5 squadron of the same size. This manpower advantage results from the simplified and modern systems which require, for example, only three C-17 crewmembers compared to seven for the C-5. This simplicity of design also reduces maintenance man-hours per flying hours (MMH/FH) from 43.35 for the C-5 to 18.6 for the C-17—a 57-percent reduction. These reduced manpower requirements, along with other efficiencies in design such as advanced aerodynamics and a modern, state-of-the-art engine, result in a C-17 costing over $68 million less in O&S costs than a C-5 over an expected 30-year life. Cost savings, of course, are only part of the equation—the C-17 will be capable of performing the full-range, combat airlift missions. Operating on either long-range intercontinental missions or short-range missions within the theater, the C-17 will be capable or routinely operating through runways only 3,000 feet long. This short-field capability, along with combat offload, truck bed height loading, and the capability to back up, make the C-17 fully compatible with a C-130-type, intratheater environment. When denied the opportunity to airland, the C-17 offers the field commander the flexibility to airdrop supplies and equipment or deliver with the low-altitude parachute extraction system (LAPES). This military utility within the theater, combined with long-range efficiency and cost effectiveness, make the C-17 a vital element in our long-range force modernization plans.

General SKANTZE. I might point out that the Air Force priority begins with the strategic modernization.

The second one is readiness and sustainability.

The third one is airlift mobility.

We are adhering to those priorities. I can assure you that the C-17 is a solid program in the Air Force perspective of what we need to do.

Senator WILSON. Thank you very much.

Senator COHEN. General Skantze, you indicated you had negotiated the C-5B contract.

General SKANTZE. I did the wing mod contract.

Senator COHEN. What flexibility in the fiscal year 1984 funding in aircraft quantity is there for the C-5?

General SKANTZE. I believe that the C-5B contract is such that we can shift, two airplanes in 2 years. We could shift one or two out of 1985 and/or 1986 and put them in 1987 and not change the terms or conditions of the funding because they happen to come out close to the end of the fiscal year. As long as you don't adjust the final order on the aircraft you can make that adjustment.

Senator **Cohen**. We have had a lot of inquiries on the part of some members about canceling the procurement contract for the aircraft.

What would be the cost involved in such a cancellation? That is the question being asked.

What if you had a reduction in funding and had to reduce the number of C-5's?

General **Skantze**. We would break the contract, in a simple sense, and the up-front funding which is partly multiyear funding, we might break that in the process.

Based on the options that we are able to exercise if we went back and did that, I think it would be a severe blow to the financial planning of that program.

Senator **Cohen**. There would be serious costs involved in that?

General **Skantze**. Yes, sir.

Senator **Cohen**. Perhaps you can lay that out in greater detail. The authorization request doesn't include any funding for the C-130's. Does the Military Airlift Command have a requirement for additional C-130's?

General **Allen**. Mr. Chairman, we have a requirement for additional intratheater airlift. There is no question about that. We don't have enough to go around. As we look at the various ways of alleviating that shortfall, the best way clearly is the C-17.

The reason that additional C-130's are not very high on our priority list is that that money is better spent, in our judgment, on the C-17.

Senator **Cohen**. So that you are, in essence, transferring the funds for the C-17 that are supposed to go into the C-130's?

General **Allen**. That is correct. We propose buying C-17's instead of additional C-130's.

Senator **Cohen**. My understanding is that you are now considering the purchase of five DC-10's now owned by the Export-Import Bank. Is that correct?

General **Allen**. I will defer to General Skantze on that one.

General **Skantze**. I am not personally involved with that at this point. I think there have been discussions and dialog.

I would like to submit something for the record.

Senator **Cohen**. I would like a bit of clarification on that.

[The information follows:]

ICELAND PURCHASE OF A/C

There are five ex-Laker Airway DC-10s in the possession of the Export-Import Bank. If a no-cost transfer can be arranged, the Air Force would take possession of the aircraft and operate them with the 89th Military Airlift Wing (MAW) at Andrews AFB. We do not, however, plan to budget for nor request additional funds to procure these aircraft.

Senator **Cohen**. I am told Iceland is also interested in picking up a couple of aircraft maybe in competition with the Air Force. Maybe we can discuss that after you have some information.

[The information follows:]

ICELAND PURCHASE OF A/C

We understand that Icelandair has expressed interest in the acquisition of two of the Laker DC-10s. The Air Force will not interfere in any way with this potential purchase between Icelandair and the Export-Import Bank. If any of the aircraft are procured by Icelandair the Air Force would still be interested in a no cost transfer of the aircraft remaining in the possession of the Export-Import Bank.

CT-39

Senator COHEN. On the CT-39, my understanding is that Senator Stevens has written to Secretary Orr instructing him to take no further action on CT-39's, the European distribution airlift.

Will you tell me more about that, what the objection is and how you are going to respond to it.

General SKANTZE. I think it was a reservation the report considered on the European distribution system. The CT-39 is part of the support aircraft.

I also believe there may be a meeting between the Secretary and Senator Stevens to discuss this.

Senator COHEN. General Allen, in your written statement you referred to the need for combat helicopters. Where would they be based and how would you plan to use them?

General ALLEN. We have a very strong need for the modernized combat helicopter system, Mr. Chairman. At the peak of the Southeast Asia conflict we had something on the order of 283 combat rescue helicopters in the Rescue and Recovery Service. Over the years since then, that capability has been allowed to atrophy severely. We are down to a total of 180 helicopters right now.

Many of them are old. They are difficult to maintain. They will not do the combat rescue job in a sophisticated defensive environment. We desperately need to modernize that portion of the force.

We are recommending this in what seems to me to be a very sensible manner. We are taking advantage of the Army's research and development efforts which lead to the UH-60 aircraft. For our purposes, it needs a little more range and a bigger engine, so we are taking advantage of the Navy's development of the bigger engine by putting it in the Army's helicopter.

Then we are taking advantage of other developments to provide it with the sensors that would be required for the night, adverse weather, combat rescue mission.

Now, where would they be based? They would literally be based all over the free world just as our rescue forces are based today. We have rescue detachments in Korea, Okinawa, the Philippines, Alaska, England, Iceland, as well as all over the United States.

These combat rescue forces would be based throughout the free world in the same manner they are today.

I might put in a word for that rescue force as a whole. I think it is significant that last fall it recorded its 20,000th saving of a human life. I think that is very impressive.

REPLENISHMENT SPARES

Senator COHEN. General, in replenishment spares for the C-5, the 130, 141, there is a 30-percent increase in fiscal year 1983.

Will you explain why you made that increase?

General ALLEN. One of my great concerns, Mr. Chairman, is that we be able to realize in an emergency situation the full potential airlift capability which is inherent in the systems we have. That requires not only peacetime operating stock, but it requires the war readiness spares kits, the WRSK, and it requires OWRM, other war reserve material, to support a high utilization for C-5's, C-130's, and C-141's.

Over the years, for a variety of reasons, the procurement of adequate spares to support that force and other Air Force airplanes as well has been neglected. Throughout the Air Force today, that has a very high priority. As a matter of fact, as General Skantze mentioned, that is the No. 2 priority, readiness, and sustainability, and that needs spare parts.

There is not enough money available to get well overnight. It takes a period of years. Also the leadtime on those spare parts is 2 years from the time you buy it until you have it. So, it takes a period of time to get well.

One of the things that is reassuring to me is the money for spare parts that is available. The Air Force is giving top priority to the C-5 and C-141 fleet in recognition of their importance.

Senator COHEN. One final question and the rest I will submit for the record. DOD has proposed consolidating the Military Traffic Management Command and Military Sealift Command.

What is the Air Force's position on that?

General ALLEN. From my point of view, and I think this reflects the Air Force view, it is a pretty good idea. We think it would lead to some improved effectiveness to have both forms of surface transportation amalgamated.

From my point of view, I would not want the Military Airlift Command to be considered as part of that consolidation. I think it would end up too big to be manageable. MAC, by itself, is about all one person can get his arms around and I can't envision somebody trying to manage all three.

I think, with regard to the two elements of the surface transportation mode, there are some benefits and efficiencies involved.

Senator COHEN. Senator Wilson.

Senator WILSON. Thank you, Mr. Chairman.

If I am correct, I heard General Allen say that the C-17 funds for research and development and ultimate acquisition is supported not only by the Chief of Staff of the Air Force but if I understood you correctly, General, by the Chief of Staff of the Army?

General ALLEN. It is indeed.

Senator WILSON. Has the Army produced any kind of formal statement rebutting or continuing in any way on this memorandum by General Ritchie?

General ALLEN. I am fairly confident, Senator Wilson, that the Chief of Staff of the Army was questioned about that in a hearing this year, and he commented on it at that time and explained that it did not represent his views whatsoever, and he was a strong supporter of the C-17.

General SKANTZE. As a matter of fact, and I think the testimony took place in the last 2 weeks when the field commanders came in and testified before the Senate Armed Services Committee. Shortly after Richardson wrote that memo, General Meyer, Chief of Staff of the Army, sent a memo to General Gabriel strongly supporting the C-17, even before the memo became public knowledge.

So, it was not an after-the-fact thing. To my knowledge, the Army has always been supportive. I was the chairman of the

Source Selection Advisory Committee in the C-X source selection and we had an Army brigadier general who was on the Source Selection Advisory Committee. All of their requirements were included in the design and they were very delighted with the C-17 as the kind of airlift that they were looking for.

General **Allen**. It is my understanding, Senator, that Major General Barker, Chief of Army Public Affairs, wrote a letter to the same magazine which published that memo, explaining what the Army's views really were.

Senator **Wilson**. Subsequent to the publication?

General **Allen**. Yes.

Senator **Wilson**. Gentlemen, I suggest we secure General Barket's letter and make that part of the record.

Senator **Cohen**. That request is made and I am sure it will be responded to.

[The information follows:]

Department of the Army,
Washington, D.C., February 18, 1983.

Mr. Richard Barnard,
Editor, Defense Week,
Washington, D.C.

Dear Mr. Barnard: On page three of the February 14th issue of Defense Week is a brief item headlined "Army Operations Chief Says He's Tired of USAF's C-17."

Although brief, the item is extremely damaging because it distorts the reality of Army/Air Force cooperation in seeking a solution to the complex strategic mobility problem both now and into the next century.

LTG Richardson most certainly did not suggest to the Chief of Staff that the C-17 "probably is not needed." He fully supports development and acquisition of the C-17. Equally important, he sees the need for a coherent, long-term approach to the strategic airlift requirements of this nation, which is the main point of the memo you published.

Subsequent to your 14 February publication of the internal Army staff memo, both the Chief of Staff and Secretary of the Army wholeheartedly reaffirmed the need to acquire the C-17 during testimony before several Congressional committees.

Llyle J. Barker, Jr.,
Major General, U.S. Army Chief of Public Affairs.

Senator **Cohen**. I have been looking at the memo from General Richardson. Frankly, I don't think it is all that critical of the C-17. Placed in context, it is saying let us get on with the job of getting the proper mix of outsize, oversize, and let us not get hung up on the C-17 as being the end all and be all of our airlift problem.

The line that struck me is that there is no guarantee that R&D funds for the C-17 will not culminate in an expensive start and stop program without a solution. He is saying let us not get fixed on one aircraft which may or may not become a political or actual reality depending on the winds as they blow on the Hill. Let us see what we need to do in getting this proper mix.

I don't know that, taken completely in context, he was a severe critic of the C-17. I am just looking at it again. It strikes me it is within that context, saying we have to have a program, we still will have to have something on a STOL aircraft, something less than a C-17, but let us not make this a focal point on which our whole airlift program rises or falls.

That is the context in which he says it. For whatever that is worth, that is my interpretation.

Senator Nunn?

Senator Nunn. I have several questions for the record, most of them are detailed questions.

I want to thank General Skantze and General Allen for being here. I am interested in the CRAF program. I will not repeat the testimony that has already been given.

General Allen, I understand you have been working on that and you gave a rather optimistic assessment about the timeframe for moving forward with that program, do you not?

General Allen. We want to move forward very quickly. I think we are just about in a position to do so. The airlines are enthusiastic about it. The Air Staff is enthusiastic about it. DOD is enthusiastic about it.

The only remaining question is how we can get the most for the Government's money.

Senator Cohen. I have one question that was submitted by Senator Quayle.

C-17 COMBAT ROLE

On page 10 and top of page 12 of your statement the C-17 has a rapid intertheater role instead of intratheater role.

Is it wise to risk an aircraft as expensive as the C-17 any more than the C-5 airlift close to the battlefront? Why not use a less expensive aircraft like the C-130's and buy more of them?

General Allen. I think a good example of that is that the Rhein-Main Air Base in Germany is one of our major air bases. It is one of our major terminals. We are going to operate C-5's, C-141's, and anything else in and out of Rhein-Main to the fullest possible extent.

Rhein-Main is within 15 minutes flying time of the frontline. It is as close to the frontlines in Europe as many of the other so-called austere air bases would be in other localities of the world. We will operate C-5's into Rhein-Main. We will operate C-17's into other austere airfields in proximity to the frontlines.

Senator Cohen. That concludes the questions that I have, General. We will submit the rest of them to you for the record.

Senator Nunn. May I ask one more question, Mr. Chairman?

Senator Cohen. Certainly.

Senator Nunn. General Allen, I understand that is a plan and I understand that probably is the plan?

PROTECTION FOR C-5'S AND C-141'S

How close has anybody examined whether you indeed are going to be able to protect those C-5's and C-141's going into Rhein-Main? I have heard a lot of testimony that you have a plan to fly there.

The question is: Will they have a field suitable to land on? Even if there is, are they going to be shot down and are we going to be able to provide adequate air defense?

General Allen. That is a good point. It has been under active consideration, both from a planning and operational point of view for in the last 6 to 8 months.

As you are well aware, there are a number of alternative destinations in Europe. We are set up in such a way, and we are improving our capability, so that we can make last minute decisions. Obviously if there is a dogfight between Mig-23's and F-15's going on right over Rhein-Main at the time the C-5 is supposed to arrive, it had better go someplace else.

So, we are putting together operational procedures and plans by which we can make those decisions at the time, whether or not to land them at an alternate and, if at an alternate, which one. That is just a part of the regular operational planning process, but it is certainly a very valid observation.

Senator Nunn. Thank you.

Senator Cohen. General Allen and General Skantze, thank you very much.

The record will remain open for questions to be submitted by other members of the subcommittee to which you may respond.

[Questions submitted by members of the Armed Services Sea Power and Force Projection Subcommittee follow:]

Questions Submitted by Senator William S. Cohen

CHANGE IN FUNDING PROFILE

Senator Cohen. The Sea Power and Force Projection Subcommittee was an early supporter of a multiyear procurement arrangement for the KC-10A aircraft. Were there any changes to the funding profile for this 5-year multiyear procurement as a result of contract negotiations with the Douglas Aircraft Company?

General Allen. Yes, the KC-10 profile changed as a result of negotiations, especially in the advance procurement area. As a result of more specific definition of the advance procurement and annual funding requirements to support the multiyear procurement arrangement, a realignment between the advance procurement and the weapon system occurred. This resulted in a net reductions of $478.0 million in advance procurement and an overall shift of funding to the later years because of better production flow schedules and vendo commitments provided by Douglas Aircraft. Also, $120.0 million which had been provided in the fiscal year 1982 supplemental was reappropriated by the Congress and applied to the weapon system requirement for fiscal year 1983.

INTERNAL RATE OF RETURN

Senator Cohen. What is the internal rate of return on the KC-10A multiyear procurement program? How does this compare with other programs which have been approved for multiyear procurement?

General Allen. The Air Force currently has four major multiyear procurement programs in the execution phase of the weapons acquisition process. Internal rate of return on these four programs is as follows:

Program and internal rate of return

[In constant fiscal year 1982 dollars]

Navstar	14.783
KC-10 aircraft	16.331
F-16 aircraft	20.308
Defense support program	6.034

ADVANCE PROCUREMENT FUNDS

Senator Cohen. Why are the advance procurement funds for the KC-10A program so large when compared to total program cost?

General Allen. There are several reasons for the high level of advance buy funding in the KC-10 program. First, the program is a multiyear procurement containing not only classical advance buy funding but economic order quantity (EOQ) funds as well. DOD funding policy requires that these funds cover estimated fiscal year expenditure requirements plus full termination liability for all work initiated.

Second, lead time on some high cost items exceeds 40 months. Included are some engine, landing gear, and refueling boom parts and materials. These very long lead items necessitate funding well in advance of deliveries.

Third, a high level of EOQ funding is needed on the program, particularly in three high value areas. On the engines, General Electric held previous contract prices so long as deliveries were made by 1986. On the fuselage sections great savings are being realized through large quantity orders. Also, excess Douglas Aircraft DC–10 inventory which is common to the KC–10 (e.g., wings) has been purchased. These actions contributed substantially to the $658 million savings of the multiyear procurement.

Finally, the production schedule differs considerably from that of other programs in that deliveries follow very closely after award of the end item order. In fiscal year 1983 the first aircraft is delivered only eight months after award. In fiscal years 1986 and 1987 only three months separate delivery from contract award. This schedule was driven by three major factors discussed during last year's multiyear testimony. First, in order for Douglas to maintain a viable wide body DC/KC–10 production line (with no current DC–10 commercial orders), deliveries had to be maintained at a minimum rate of one per month.

To accommodate our funding, Douglas agreed to hold below this level (at eight per year) for the first two years of the multiyear effort. Second, we felt it necessary to remain as close to the originally submitted fiscal year 1983 President's Budget TOA profile as possible. By comparison, TOA of $323.8 million in fiscal year 1983 would have fully funded the program with no need for any advance buy but would have been unacceptable to both DOD and Congress. Finally, we wanted to retain the favorable terms, conditions, and prices contained in the original contract. The program presented to Congress met these three criteria.

Advance buy funds are delineated in the contract. Any reduction made to the profile would require contract renegotiation with attendant price increases. Though KC–10 advance buy requirements are higher than those on other programs, the unique conditions of this program dictate these funding levels and are not unreasonable when considered in light of the particular conditions.

ADVANTAGES OF C–5B PROCUREMENT

Senator Cohen. It has often been stated that the C–5B procurement program was advantageous to the Department of Defense in terms of program costs. Can you validate this statement?

General Allen. Yes, the OSD Cost Analysis Improvement Group evaluated the C–5B proposal prior to the decision to buy C–5Bs and concluded that the Lockheed offer was very good. Their analysis was based on cost data obtained during the production phase of the C–5A and did not include areas which were driven by the early overruns during C–5A development.

An independent cost analysis was performed on the C–5B program and concluded that the most probable cost was slightly higher than the fixed price contract value signed by Lockheed. The analysis also concluded that Lockheed would be able to manage the program within the fixed price value.

WIDE-BODY CARGO AIRCRAFT

Senator Cohen. In fiscal year 1983, $144.8 million was authorized and appropriated for the procurement of three existing wide-body cargo aircraft. To what missions will these aircraft be dedicated and what will their organizational assignment be?

General Allen. The Continuing Resolution Authority directed the assignment of the "wide-bodied aircraft" to the Air National Guard. Decisions on specific unit beddown have yet to be made.

To date, none of the decisions concerning this force adjustment are finalized. The concept of operations and logistics support concepts for the addition of "wide-bodied aircraft" are currently being formulated by the Air Force. Mission areas that are being considered include: strategic airlift, and providing a backup capability for the NASA Shuttle Carrier Aircraft. The discussions between NASA and the Air Force concerning Shuttle Carrier requirements are at an early stage and no decisions have been made.

PRIORITY TO EDSA PROGRAM

Senator Cohen. Does the Air Force continue to attach high priority to the EDSA program?

General Allen. The Air Force continues to place a very high priority on the necessary improvements in readiness and sustainability provided by the European Distribution System.

STATUS OF EDSA PROCUREMENT COMPETITION

Senator COHEN. What is the status of the EDSA procurement competition?

General ALLEN. The Air Force will complete a draft EDSA Request For Proposal (RFP) cycle in April 1983 and release the formal RFP for the EDSA the first of May 1983. The competitive source selection process will be completed in September 1983 with contract award at that time.

ADVANTAGES OF EUROPEAN A/C

Senator COHEN. Since EDSA's will be operated in Europe, to what extent has the Air Force considered the advantages of procuring a European produced aircraft?

General ALLEN. The Air Force has considered the advantages of procuring a European produced aircraft for the EDSA and found that potential advantages do not outweigh the benefits derived by open competition. Most potential advantages of a European produced aircraft are in the logistics support area. It should be pointed out that the class of aircraft needed for EDSA is very simple to maintain. Further, most aircraft systems (engines/avionics) are not manufactured by the aircraft manufacture. We believe there are no significant benefits to the Government by mandating a European produced EDSA.

STATUS OF COMPETITION FOR C-140B REPLACEMENT AIRCRAFT

Senator COHEN. What is the status of the procurement competition for the C-140B replacement aircraft? Who are the competitors and when is a source selection decision expected?

General ALLEN. A Request for Proposals was issued in October 1982. Responses received from three contractors in December 1982 are currently being evaluated. The competitors are The Boeing Company (737), Gulfstream Aerospace (Gulfstream III), and Lockheed Air Services with the Fokker Company of The Netherlands as their subcontractor to provide the basic airframe (F-28). It is estimated that the winning contractor will be announced in June 1983, with contract award and delivery of replacement aircraft soon thereafter.

DESCRIBE CT-39 PROGRAM

Senator COHEN. I understand that O&M funding is included in fiscal year 1984 for lease of CT-39 replacement aircraft. Would you please describe this program?

General ALLEN. The CT-39 replacement program acquisition strategy is relatively straight forward. Simply put, the Air Force plans to structure a competitive leasing of a suitable number of CT-39 replacement aircraft by using a multiyear contract for five (5) years, with up to three (3) option years, with the right of first refusal to purchase at the end of the lease period.

We do not intend to acquire title to the aircraft without Congressional approval but merely obtain possession and use of them on a lease basis. The Air Force will provide pilots and fuel. As a part of this proposal, we intend to ask contractors to provide maintenance and support and familiarization training for an initial complement of Air Force personnel.

Funding for this program will be provided from the Air Force's Operation and Maintenance account. Discussions with industry indicate several aircraft manufacturers are currently interested in competing for the right to provide aircraft on this basis. We believe there are substantial savings in both manpower and operating costs to be realized by operating and maintaining a fleet of modern fuel efficient aircraft without the major investment required to purchase such a fleet.

LEASE VS. BUY PROGRAMS

Senator COHEN. There is considerable controversy concerning various DOD lease-versus-buy programs. Has any congressional committee raised concerns about the CT-39 replacement aircraft program in this regard?

General ALLEN. Yes. On February 28, 1983, the Committee on Ways and Means, Subcommittee on Oversight, House of Representatives, held a hearing on "The Impact of Federal Leasing Practices". Witnesses at this hearing included representatives from the Air Force, Navy, DOD, Treasury, GAO, and Joint Committee on Taxation.

The committee stated at the onset of the hearings that they planned to examine the leasing practices of Federal agencies to gain an understanding of what the "full costs" are to the Federal government when agencies lease rather than buy equipment. Although the committee focused on the Navy's program to lease ships, the

Air Force's lease programs (including the CT-39 replacement program) were included in discussions and testimony during the hearing.

ALTERNATIVE FUNDING FOR C-17 R&D

Senator **Cohen**. What alternative funding profiles for C-17 R&D have been considered and what initial operating capabilities (IOCs) would result?

Can these funding profiles be maintained given the other substantial demands on airlift funds?

General **Allen**. We are doing considerable work during the current budget deliberations to refine the dollars submitted in the fiscal year 1984 President's Budget for the C-17. Profiles were examined that procured aircraft as early as fiscal year 1987 and as late as fiscal year 1989. Proper phasing with other high priority Air Force programs to remain with budgetary constraints was a major concern.

The following is an estimated amount for R&D during the period fiscal year 1985–fiscal year 1989 and it must be understood that it has not been reviewed by outside program channels. Regardless of the profile considered, the R&D cost in these years is approximately the same because a majority of the development effort is completed in this time period.

Estimated five year (fiscal year 1985–fiscal year 1989) R&D cost in then year dollars is $3.0 billion.

C-130A/C-141A/C REPLACEMENTS

Senator **Cohen**. What alternative programs for the C-17 were considered for C-130A and C-141 aircraft replacements?

General **Allen**. During development of the C-X Request For Proposal (RFP), all reasonable alternatives for maintaining the required capability in the airlift force were considered. These included modified versions of in-production aircraft such as B-747s and DC-10s as well as C-130s. None of these options however, would have provided the required combination of capabilities that will be lost when C-130As and C-141s begin to leave the force in the mid-1990s.

OTHER PROCUREMENT

Senator **Cohen**. Are Other Procurement programs in support of the airlift mission adequately funded?

General **Allen**. Based on overall Air Force priorities, Other Procurement equipment for airlift mission support to include such items as Material Handling Equipment is adequately funded.

Questions Submitted by Senator Sam Nunn

INCREASED SPARES FUNDING FOR IMPROVED READINESS

Senator **Nunn**. General Allen, over the last couple of years, Congress has increased funding for spares in attempt to improve readiness. In your own command's day to day operations, have you noticed any improvements that could be attributed to increase in spares?

General **Allen**. The monies authorized and appropriated in fiscal years 1981 and 1982 were used to procure those items having the longest lead times, so much of the actual delivery of those spares will occur within this next year. However, we are beginning to see improvement in our spares posture, and my field commanders anticipate significant improvements in readiness as we continue to fund needed spares procurement.

REWINGED C-5A

Senator **Nunn**. The Military Airlift Command has been operating the first "rewinged" C-5A for over a year now. From an operational standpoint, have you been satisfied with its performance?

General **Allen**. The first "Rewinged" C-5A has been stationed at Dover AFB DE since Jan. 81. For the first 7 months, the aircraft entered a test phase where it flew 3.0 hours per day vice the 2.0 hours per day programmed for the unmodified aircraft. After completing this test with only minor modifications, it has been used routinely to fly missions with 80 to 98 tons of cargo as compared to the 25 to the 50 ton cargo limit of the unmodified aircraft. These modifications will be incorporated into the ongoing modification schedule. Since modification, that first aircraft has flown 2100 hours, and we are more than satisfied with its performance.

C–5A WING MOD PROGRAM

Senator Nunn. We understand that the C–5A wing mod program has continued to meet or exceed all of its objectives and that the first production airplane recently was delivered almost a month ahead of schedule and under budget. I'd like to hear your comments on the status of this program.

General Skantze. The RDT&E effort is nearing completion with only balance of testing to 105,000 cyclic test hours (3.5 lifetimes), residual strength testing, fatigue article teardown inspection, and final test report to be completed. The RDT&E will complete $37.0 million under budget. Meanwhile the prototype aircraft has accumulated approximately 2,000 hours flying time and met or exceeded all of its objectives. The first production aircraft was delivered on February 28, 1983, 24 days ahead of schedule. Adjustments are currently being experienced on the production program that, we are confident, will allow the program to complete within the budgeted costs.

SURVEY OF C–5 PRODUCTION TOOLING

Senator Nunn. Supposedly the Air Force has completed a thorough survey of the status of the original C–5 production tooling. Can you give us a status report?

General Skantze. Lockheed is implementing their item by item survey plan. There are 210,635 individual tools used in C–5 production. Of these, 110,381 are Lockheed's. Currently, 19,676 are in use for the wing mod program. 8,372 have been moved to Lockheed California for refurbishment as necessary. The remaining tools are being surveyed at Lockheed Georgia.

As of March 25, 1983 the survey is complete on 28,000 tools. 1.4 percent require replacement while 2.0 percent require significant refurbishment. These results are better than the estimates on which the Lockheed proposal was based.

Of the 100,254 subcontractor tools, 49,492 are presently in use for either spares or in the wing mod program. The remaining subcontractor tools are being surveyed as each subcontract is negotiated.

C–5B

Senator Nunn. Some months have now passed since the Air Force signed the C–5B production contract. I would think that in that time a number of subcontractors have been activated. Can you give us some idea of how this program is progressing, particularly from the subcontractor standpoint?

General Skantze. Lockheed has been in continuous dialogue with their suppliers and subcontractors concerning the C–5 restart. The activity started long before the unsolicited proposal was submitted in October 1981. To the maximum extent, Lockheed has returned to the same sources that were used during the C–5A program.

During the evaluation of the C–5B proposal, the Air Force conducted a Manufacturing/Quality Assurance Survey specifically to verify that both Lockheed and the subcontractors were ready to resume production and that the schedule was achievable. The survey was completed prior to contract award and concluded that both Lockheed and its subs were ready.

Lockheed is still in negotiation with subcontractors on a lead time priority basis. Thus far, approximately 10 percent of the subcontracting activity has been completed representing 25 percent of the dollars which Lockheed has allocated to subcontractors. The Air Force is continuously monitoring both the subcontracting activity and subcontractor performance.

C–141 REPLACEMENT

Senator Nunn. General Allen, when do you anticipate replacing the C–141 fleet based on current usage?

General Allen. Current forecasts indicate all C–141s will have to retire shortly after the year 2000 unless actions are taken to extend their service life. MAC has a plan that would, upon procurement of C–17s for the active force, retire the oldest portion of the aging C–130 fleet from the reserve forces, retire the 54 oldest C–141s from the active fleet, and transfer the remaining C–141s into the reserve forces between 1991 and 1998.

Various crew ratios the transferred C–141s were evaluated to determine which crew ratio provided the best balance between manpower requirements, force stability, wartime capability loss, and service extension. As part of an integrated plan, a crew ratio for the transferred aircraft of two crews per aircraft was chosen. Higher crew ratios might be attained, but in an integrated plan, a crew ratio of two crews per aircraft and the associated utilization rates would provide the most effective balance of all criteria. This approach would lower the wartime capability of the transferred aircraft but would extend its service life until about 2015.

EUROPEAN DISTRIBUTION SYSTEM AIRCRAFT (EDSA)

Senator NUNN. Could your current fleet of tactical transports provide the same service as that to be provided by the European Distribution System Aircraft in wartime? Why not?

General ALLEN. The current fleet of tactical transports can satisfy some of the mission requirements of the European Distribution System. However, there are major issues which must be addressed if the current fleet were to be employed for the distribution of USAFE fighter logistics assets. Recent airlift studies have indicated that the C-130 fleet is insufficient to accomplish all the directed intratheater airlift tasks needed to successfully prosecute a conflict in Europe. To assign our existing tactical transports to the European Distribution System would dilute our limited capability to provide other intratheater support. Although the C-130 can transport the required fighter engines and spares, we could not take full advantage of its capability especially when operating into the short fields available for the EDSA wartime mission (i.e., 2,000 ft interdicted runways). The EDSA mission is of such dimension that a cargo aircraft, smaller, and less expensive than a C-130, can do the job more efficiently and much more economically.

CIVIL RESERVE AIR FLEET (CRAF) ENHANCEMENT PROGRAM

Senator NUNN. General Allen, the Air Force is requesting $144.3 million to finance the conversion of commercial passenger aircraft to a cargo-carrying configuration and to provide offsets for the resulting higher operating costs of these aircraft. How many aircraft will you be able to place on contract with the $144.3 million?

General ALLEN. The exact number of aircraft for which we would contract with the $144.3 million for the Civil Reserve Air Fleet (CRAF) Enhancement Porgram depends on the type wide-body aircraft chosen during the source selection competition. There are three types of wide-body passenger aircraft in the United States inventory: the B-747, DC-10, and L-1011. The $144.3 million could modify three B-747s. If one of the other aircraft was selected, the number of aircraft may vary, but the cost and capability would approximate the three B-747s. Regardless of aircraft type, the life cycle costs would be one sixth of those incurred if the Air Force owned and operated the same aircraft.

Senator NUNN. General Allen, when will requests for proposal be released for these CRAF conversions?

General ALLEN. We will release the Requests for Proposals for the CRAF conversion by this summer with a contract awarded soon thereafter.

FISCAL YEAR 1981 CRAF ENHANCEMENT APPROPRIATION

Senator NUNN. General Allen, given the current schedule for the CRAF program, will you be able to obligate the $37 million remaining in the CRAF account that was appropriated for fiscal year 1981? What do you plan to do with this money if it is not available for CRAF obligation?

General ALLEN. Although perhaps optimistic, my staff is preparing two RFPs which we hope to have released sometime in June. One will be presented to the civil airline industry for the use of their aircraft; the second will be released to the aircraft manufacturers who will do the actual modifications. With concerted effort on the part of all concerned, we hope to have contracts signed in time to use that $37 million of fiscal year 1981 money. If that effort is not successful, we will recommend to the Air Staff and DOD that the fiscal year 1981 CRAF Enhancement money be reprogrammed into another airlift program.

CIVIL RESERVE AIR FLEET (CRAF) ENHANCEMENT PROGRAM

Senator NUNN. General Allen, what is your appraisal of the likelihood that 3 contracts for Boeing 747 type aircraft can be obtained for the $144.3 million requested for CRAF for fiscal year 1984?

General ALLEN. All the necessary ingredients are present this year for awarding three CRAF Enhancement contracts. We have the need for increased airlift, the support of the airline industry, the necessary legislation, and have requested sufficient funds to begin the program. With Congressional support we have removed obstacles which impeded past CRAF Enhancement efforts. The burden of financial risks for participating in the program no longer has to be shouldered by the carriers. Any unforeseen increases in operating costs or fuel prices due to our modification can be adjusted annually. In addition, we can guarantee the resale value of all contracted aircraft, removing the carriers' risk of being burdened with equipment that may be less marketable. Contractual difficulties have also been resolved, and now we can consider all eligible wide-body aircraft. I believe these steps have helped regain the initiative for a program which we hope will play a vital role in meeting our national airlift requirements.

WIDE-BODY CARGO AIRCRAFT

Senator NUNN. General Allen, how does MAC plan to utilize the 747 type aircraft authorized and funded last year? Is this not a suitable mission for our Guard or Reserve forces?

General ALLEN. The three wide-body aircraft funded in fiscal year 1983 can be used to augment the MAC organic force. We recommend these aircraft be assigned to the Air Reserve Forces (ARF). We envision using them to support common user cargo movement primarily between East Coast Bases and Germany. We feel the aircrews can maintain a satisfactory level of readiness by operating within the airlift system. An ancillary mission is being studied for these aircraft: to support the NASA Space Transportation System (STS). The proposal includes a canister to be attachable to the top of the 747 similar to the space shuttle vehicle. However, these aircraft should be reserved primarily for airlift of cargo to support wartime requirements. These aircraft will contribute to the overall DOD airlift capability and will be incorporated in the strategic capabilities planning documents when they come on line.

MANNING LEVELS IN THE MILITARY AIRLIFT COMMAND

Senator NUNN. General Allen, what are the current personnel levels in MAC and what were they for fiscal years 1980, 81, 82, and 83? What are the planned fiscal year 1984, and 5-year plans? Is MAC planning to increase the number of active duty personnel to support the C-5 and C-141 program?

General ALLEN. As of 1 March 1983, there were 94,274 people assigned to the Military Airlift Command. This was comprised of 12,563 officers, 65,106 airmen, and 16,605 civilians. The following table illustrates what our assigned personnel levels were beginning in fiscal year 1980 and what the projected authorizations are through fiscal year 1988:

	Officer	Airmen	Civilian	Total
Fiscal year:				
1980	11,937	58,990	16,612	87,539
1981	11,890	60,191	16,171	88,252
1982	11,951	61,425	15,975	89,351
1983 [1]	12,721	64,432	16,847	94,000
1984 [1]	12,849	65,255	16,839	94,943
1985 [1]	12,946	66,185	16,822	95,953
1986 [1]	13,085	66,846	16,542	96,473
1987 [1]	13,283	68,064	16,568	97,915
1988 [1]	13,572	69,945	16,735	100,252

[1] Projected authorizations.

We plan to begin increasing our active duty manning levels in fiscal year 1985 to meet the procurement of the C–5B. The projected figures listed above include these increases. As can be seen, the addition of the C-5B to MAC's inventory is the primary factor for the need to add to our future personnel levels. Presently, there are no requirements to increase our manning authorizations due to any C-141 programs.

STATUS OF C–17 REPROGRAMING

Senator NUNN. Language in the conference report accompanying the appropriations continuing resolution for fiscal year 1983 called for a reprograming of $59 million to provide $60 million in development funds for the C-17 in fiscal year 1983. What is the status of the reprograming?

General Shantze. The Air Force has sent the necessary reprograming documents to OSD which would allow us to obligate the full $60 million in fiscal year 1983 funds. A final decision by OSD on whether to submit this to Congress for action has not been made at this time.

DEFINE C-17 PROGRAM

Senator Nunn. A recent letter from Secretary Weinberger to Senator Tower on Selected Acquisition Reports (SAR's) for various programs states that, for the C-17: "SAR reporting should be deferred until a firm program baseline . . . can be established."

The C-17 program seems somewhat undefined at this point—given the Air Force request for $26.8 million in fiscal year 1984 for full-scale development. Is the C-17 program defined well enough at this point to enter full-scale development? What is the estimated total program cost? For how many aircraft? What is the date of initial operational capability? What are the five year budget costs in both Budget Authority and outlays for fiscal year 1984 and four following years?

General Shantze. An efficient and well defined program is being structured in our fiscal year 1985 budget deliberations. The current program will continue at a low-level R&D effort pending a full scale engineering development decision.

The current Air Force position on the C-17 is based on a "Most Probable Cost (MPC)" estimate performed during C-X source selection. The MPC estimate was performed by an independent team of Aeronautical Systems Division comptroller personnel and is considered an independent cost estimate.

The audited C-17 constant year 1980 dollar MPC for the Full Scale Engineering Development Program was $2.438 billion and for a procurement program quantity of 182 aircraft was $12.889 billion. These estimates are based on a production quantity and schedule as contained in the contract.

Based on the program under consideration, the estimate of Initial Operational Capability is fiscal year 1992.

The fiscal year 1984 President's Budget in both Budget Authority and outlays for fiscal year 1984 and four years thereafter are as follows:

[In millions of dollars]

	Fiscal year—				
	1984	1985	1986	1987	1988
Budget authority:					
RDT&E (3600)	26.8	32.6	72.6	395.1	392.6
PROC (3010)	0	0	0	766.0	1,627.5
Weapons systems	0	0	0	(696.8)	(1,512.9)
Initial spares	0	0	0	0	0
Quantity buy	0	0	0	(2.0)	(12.0)
Total	26.8	32.6	72.6	1,161.1	2,020.1
Outlays:					
RDT&E (3600)	16.6	29.2	56.8	270.4	378.6
PROC (3010)	0	0	0	68.9	560.1
Total	16.6	29.2	56.8	339.3	938.7

These profiles may change somewhat in the fiscal year 1985–fiscal year 1988 figures shown as a result of the full scale engineering decision that is presently being considered in our fiscal year 1985 budget deliberations.

LEASING OF A/C REPLACE THE CT-39

Senator Nunn. General Skantze, a cost analysis performed by an outside consultant for the Navy to examine the relative cost of leasing versus purchasing certain TAKX cargo ships found leasing to be the least costly method of acquiring these ships.

This conclusion, however—that long-term leasing is less costly than purchase in acquiring equipment by the Federal Government—is disputed by, among others, the staff of the Joint Committee on Taxation, the Congressional Research Service and the Department of the Treasury. What effect will this dispute have on Air Force plans to replace its fleet of CT-39 aircraft?

General **Skantze**. The dispute over the Navy's lease cost analysis centers on the methodology used by the Navy study in determining the total impact of leasing on the U.S. Treasury.

Preliminary cost studies that did not include the total impact of leasing on the U.S. Treasury have been conducted by the Air Force on the proposed CT-39 replacement program. These studies indicate that leasing is economically beneficial for the program being considered.

Since the issue of tax flow to the U.S. Treasury resulting from leasing has been raised, the Air Force has developed a cost analysis methodology that considers the total impact of leasing on the U.S. Government. This methodology was developed in conjunction with guidance issued by the Joint Committee on Taxation and the U.S. Treasury.

Preliminary results of the revised Air Force cost analysis model continue to indicate that leasing is economically beneficial for the proposed CT-39 replacement program. The ongoing Navy cost analysis dispute is a separate issue and should not impact on the plans of the Air Force to replace its fleet of CT-39 aircraft.

C-140B REPLACEMENT

Senator **Nunn**. What is the Air Force plan for replacement of its C-140B aircraft? What is the time table for implementing this plan? Will this plan involve leasing and purchase? Why?

General **Skantze**. A Request for Proposals was issued in October 1982. Responses received from three contractors in December 1982 are currently being evaluated. It is estimated that the winning contractor will be announced in June 1983, with contract award and delivery of replacement aircraft soon thereafter.

The program includes the procurement of 11 replacement aircraft during the period fiscal year 1985 to fiscal year 1988 following the lease of three aircraft in fiscal year 1983 and fiscal year 1984. The purpose of the lease portion of the program is to provide replacement aircraft as soon as possible while permitting an orderly, scheduled procurement funding profile beginning in fiscal year 1985.

LONG RANGE AIRLIFT MASTER PLAN

Senator **Nunn**. Last year the Air Force informed us that their long range airlift master plan would be ready in the first quarter of fiscal year 1983. When will this plan be available for our review?

General **Skantze**. The Military Airlift Command long range airlift plan will be submitted to the Air Staff in mid-April. This plan represents MAC's position and will receive further review to establish AF and DOD approved positions. Following Air Staff and DOD review the approved long range airlift plan will be available.

C-17 R&D

Senator **Nunn**. There has been some estimates from OSD of $3-4 billion for the development of the C-17. What is the Air Force estimate of the funding required for full scale engineering development for the C-17?

General **Skantze**. The audited C-17 constant year 80 dollar "Most Probable Cost (MPC)" for the full scale engineering development program is $2.438 billion. This MPC estimate was performed during C-X source selection by an independent team of Aeronautical Systems Division comptroller personnel and is considered an independent cost estimate. This is consistent with the original program base year estimate of $2.3 billion for full scale development in fiscal year 1979 dollars.

The current total estimated R&D cost (Appn 3600) is $3.9 billion in then year dollars. This amount includes the cost for building three test article aircraft that will be used during development.

Question Submitted by Senator Gary Hart

C-17 PROGRAM ESTIMATES

Senator **Hart**. General Skantze, would please provide the current Administration estimate of the five year R&D and procurement costs of the C-17?

General **Skantze**. The funding profile for the C-17 submitted in the fiscal year 1984 President's Budget is as follows:

	Fiscal year—				
	1984	1985	1986	1987	1988
RDT&E (3600)	26.8	32.6	72.6	395.1	392.6
PROC (3010)	0	0	0	766.0	1,627.5
Weapon Systems	0	0	0	(696.8)	(1,512.9)
Initial spares	0	0	0	(69.2)	(114.6)
Quantity buy	0	0	0	(6.0)	(12.0)
Total	26.8	32.6	72.6	1,161.1	2,020.1

This profile may change somewhat in the fiscal year 1985–fiscal year 1988 figures shown as a result of the full scale engineering decision that is presently being considered in our fiscal year 1985 budget deliberations.

Senator **Cohen**. The subcommittee is adjourned.

[Whereupon, at 3:10 p.m., the subcommittee adjourned, subject to the call of the Chair.]

DEPARTMENT OF DEFENSE AUTHORIZATION FOR APPROPRIATIONS FOR FISCAL YEAR 1984

WEDNESDAY, APRIL 6, 1983

U.S. Senate,
Subcommittee on Sea Power and Force Projection,
Committee on Armed Services,
Washington, D.C.

RESEARCH, WEAPONS, AND ASW AIRCRAFT

The subcommittee met, in open session, at 10:05 a.m., in room SR-232A, Russell Senate Office Building, Senator William S. Cohen (chairman) presiding.

Present: Senators Cohen, Wilson, and Nunn.

Staff present: L. Wayne Arny III and Patrick L. Renehan, professional staff members; Mark B. Robinson, research assistant; and Kathleen L. McGuire, staff assistant.

Also present: Jim Dykstra, assistant to Senator Cohen; Hank Steenstra, assistant to Senator Quayle; Mary Shields, assistant to Senator Stennis; Robert Nichols, assistant to Senator Jackson; and Bill Lind, assistant to Sentor Hart.

OPENING STATEMENT BY SENATOR WILLIAM S. COHEN, CHAIRMAN

Senator **Cohen**. The committee will come to order.

Today we are examining programs in the areas of research, development, test, and evaluation; weapons procurement; and aircraft procurement that fall within the purview of the Sea Power and Force Projection Subcommittee.

It is my pleasure to welcome Mr. Melvyn Paisley, Assistant Secretary of the Navy for Research, Engineering, and Systems; Vice Adm. Robert Monroe, Director of Navy Research, Development, Test, and Evaluation; Vice Adm. Dutch Schoultz, Deputy Chief of Naval Operations for Air Warfare; Rear Adm. John Nyquist, Director of Surface Combat Systems; Brig. Gen. Eugene Russell, the Deputy Chief of Staff for Research, Development and Systems; and Rear Adm. Steve Hostettler, Director of the Joint Cruise Missile Project Office.

A strong relation has always existed between programs which are currently being procured and programs that are currently in research and development. This subcommittee has always had an abiding interest in R&D because the R&D account represents a considerable portion of the funds we spend on defense, and it is the only way we can be sure that we are properly addressing the threat posed to our fleet and our interests by tomorrow's weapons.

Indeed, this is why this subcommittee, as opposed to others like it in Congress, was structured to include oversight of both R&D and procurement. We attempt to view the Sea Power and Force Projection roles through a mission-oriented bias rather than just a budget-oriented bias.

Without R&D, the weapons we procure presently would not be capable of meeting the threat of today, nor would we be confident that tomorrow's weapons would be capable of meeting the projected threat.

I understand that Secretary Paisley will provide most of his comments for the record, and that most of our time today will be spent examining seven of the more important issues before us. These include:

LAMPS helicopter procurement, both the Mark I and the Mark III.

The SH-60F carrier variant helicopter.

Tomahawk missile development and procurement.

DDG-51 development and design plans.

The Navy response to the threat of antiship missiles and the testing of antiship missile defenses.

ALWT and Mark 48 ADCAP torpedo development funding and mine warfare.

There are a number of cost, performance or rationale questions associated with each of these topics which we need to discuss. I am confident that other programs will be addressed as well during questioning. And then after a half hour move into a closed session so that we can address some questions that require a classified response.

I anticipate Senator Nunn joining us at a later time. At that time he may have an opening statement. Pending that, Mr. Paisley, why don't you begin?

STATEMENT OF MELVYN R. PAISLEY, ASSISTANT SECRETARY OF THE NAVY (RESEARCH, ENGINEERING AND SYSTEMS), ACCOMPANIED BY VICE ADM. ROBERT R. MONROE, U.S. NAVY, DIRECTOR (NAVY RESEARCH, DEVELOPMENT, TEST, AND EVALUATION); VICE ADM. R. F. SCHOULTZ, U.S. NAVY, DEPUTY CHIEF OF NAVAL OPERATIONS (AIR WARFARE); REAR ADM. J. W. NYQUIST, U.S. NAVY, DIRECTOR (SURFACE COMBAT SYSTEMS); BRIG. GEN. E. B. RUSSELL, U.S. MARINE CORPS, DEPUTY CHIEF OF STAFF (RESEARCH, DEVELOPMENT, AND SYSTEMS); REAR ADM. STEVEN HOSTETTLER, U.S. NAVY, DIRECTOR, JOINT CRUISE MISSILE PROJECT OFFICE, NAVAL SEA SYSTEMS COMMAND; GERALD A. CANN, PRINCIPAL DEPUTY ASSISTANT SECRETARY OF THE NAVY (RESEARCH, ENGINEERING AND SYSTEMS); AND RICHARD METREY, DIRECTOR FOR SURFACE PROGRAMS, OFFICE OF THE ASSISTANT SECRETARY OF THE NAVY (RESEARCH, ENGINEERING AND SYSTEMS)

Mr. PAISLEY. It is a pleasure to be here again, Mr. Chairman.

I will make a brief statement about the programs we are going to talk about. I have about four witnesses who will talk on those programs in more detail and the whole thing will take about a half hour. We will keep that session unclassified.

Last year I said I would like to continue doing here what I have done over at the House and that is to be as forthright as possible, giving you the answers to all questions while we are here whenever possible.

In addition, wherever necessary, we will answer for the record, but we will attempt as much as possible to give you the answer now so that you will have the maximum time to use it.

I will be talking about all the programs that you mentioned. We will have four different witnesses talk about those programs in four different groups.

Admiral Schoultz and General Russell will be available for questions in that they do not cover specifically those programs themselves. So, all the witnesses will be available for discussion throughout the whole time period.

LAMPS PROGRAM

On the LAMPS program, the LAMPS fill a fundamental requirement of our surface combatants. It is the primary ASW localization and weapon delivery vehicle. This capability can really alter an engagement. So is is not a thing we treat lightly in terms of requirement. The initial concept has been shown to be very valuable in the deployment of LAMPS I and the LAMPS III brings a much increased capability to the fleet.

I would like to say we will go into a lot more detail on that in the executive session.

Now, in regard to the new submarine design I might say in my short 2 years in the Government I have been able to look at the different communities in the Navy and see how they organize to do different tasks.

The submarine community is a very organized community. As far as the new submarine design goes they have pulled together all of the technical programs that are required to support the new submarine design.

In addition to some of the programs, an example of which is SUBACS, they have laid out a development program that goes through three phases where that program winds up in the third phase being incorporated into the new submarine design.

Along with this requirement comes a requirement to continually increase our capability in torpedoes. The Mark 48 ADCAP program will bring a torpedo to be used by the submarine that can address the threat out into the year 2000. The advanced light-weight torpedo brings a similar capability for air and surface launch out into the same time period that this threat develops.

ASW HELICOPTER PROGRAM

Another important ASW program of very high priority to the Navy is our ASW helicopter program, the SH-60F. Fundamentally what we are doing is taking the existing LAMPS III airframe and putting into that airframe an existing dipping sonar that will give us the capability to operate in the high noise environment that exists around the battle group.

Now, in regard to Aegis testing, which is a subset of the entire test program that we have for ships, I think there has been a lot in the press on this lately and justifiably so. I think it is an area of interest. I think it is an area of logical questioning. It was brought about by some of the reports that came out of the Falklands study.

I think the Aegis itself is probably the best tested and it is not complete yet, there is more testing to go on—it is one of the most completely tested systems that we have put to sea. We are going to talk in some detail about what we are doing in that test program and to what extent we have yet other things to do.

This will eventually be the case with the DDG-51 which is in earlier phasing of its development, actually now being directed toward a go-ahead in fiscal 1985 and it provides for lead ship award that year. It will fill a requirement for a battle force capability, for a guided missile destroyer to replace the aging ships that will be coming out of the fleet.

One of the things we are looking forward to seeing deployed in ships of this type is our new Tomahawk. I think that the Tomahawk program is one of the most important weapon systems that the Navy is working on today. We have had a lot of problems on this program.

The problems we are having are not problems that I am unfamiliar with because I have seen problems like this develop on almost every large weapons system program that I have been involved in.

What we have done is identify the problems, identify an action plan to close out these problems over a period of time. We have changed the management structure within the Navy and the contractor continuously has changed his management structure.

One of the most important things I think we have done is my experience says that if you have a contractor that you want to have pay high attention to your program, give him a high enough contract responsibility that his stockholders know it. Let his stockholders know that this is their program.

We did not have the proper contracting structure in the program, for instance, to have General Dynamics say this is our program, we are responsible for this missile. We have changed the contract structure. General Dynamics is responsible for the all up round. The stockholders of General Dynamics will remind their management if they read in the paper that program is in trouble, because it is now a General Dynamics program.

We have handed the integration problem on the platforms over to McDonnell Douglas. Now we have two contractors that are responsible for a higher level of the project. I have to say that the Navy has to share the responsibility with the contractors on this program getting in trouble. I may say in general that is always the case. It is not always the service alone; it is usually the contractor and the service.

So, I think we have made some positive steps in that direction. We are going to talk to you about it in more detail.

Senator COHEN. Also having to pick up some of those costs would come to the attention of stockholders who would realize where the responsibility is.

Mr. PAISLEY. One could talk about what do you do with the contractor because he has done this. I think it is a very logical question to ask. I don't care what happens in a program in any company. If that program gets in trouble, whether you can find it on paper or not, that costs that company money. A smooth running program always yields higher profits for a company than a program that is in trouble.

They are not going to see a profit in this program that they would have seen if they had not gotten into trouble. It is an outflow of the nature of the problem.

Senator COHEN. It is not that we are suggesting any contractor is making a profit on inefficiency or mismanagement, but rather we have to account to the taxpayers why we are running billions of dollars over the projected cost on any given weapon system, whether it is Tomahawk or anything else.

Even though that dramatic cost growth has been reduced in the last year or so, it is still a remarkable amount of money that is being spent over and above what was originally budgeted.

Mr. PAISLEY. That is right. I think we will try to address today what we think we have done about that and to what extent those costs are justified.

With that, I would like to turn to my principal deputy, Gerry Cann, who will cover the first three of the programs.

[The prepared statement of Mr. Paisley follows:]

PREPARED STATEMENT OF MELVYN R. PAISLEY, ASSISTANT SECRETARY OF THE NAVY, RESEARCH, ENGINEERING AND SYSTEMS

A. INTRODUCTION

Mr. Chairman and Members of the Committee, it is again an honor and a pleasure to appear before you. Although the honeymoon may be over, the spirit of cooperation to which we pledged ourselves last year is not. It is a privilege to present the Department of the Navy Fiscal Year 1984 Reserch, Development, Test and Evaluation Program and Budget in this spirit.

I want to assure you that in putting together the program I am presenting to you today, we have been guided both by the magnitude of the threat we face and the constraints upon the resources available to counter that threat. To ensure maximum cost effectiveness, we have rigorously scrutinized our programs, looking across service lines for joint programing whenever possible, and across the seas to our allies for mutual cooperation in order to avoid waste and duplication. This endeavor, coupled with sound business practices and some hard decisions at home, has produced what I believe is a budget that fully supports the President's national defense priorities and the Secretary of the Navy's goals for achieving them.

Three factors which have made the budgetary considerations extremely complex have been discussed in earlier testimony by the Secretary of the Navy, the Chief of Naval Operations and the Commandant of the Marine Corps:

Continuing expansion of Soviet capabilities.

Increased costs of developing, buying and maintaining technologically advanced equipment.

Budgetary constraints.

As custodians of the resources you have provided, we are continuing to emphasize getting the most defense out of every dollar. We are, I believe, making definite progress toward this goal by being both increasingly selective in the choice of the RDT&E programs and projects we pursue, and by being increasingly demanding and efficient in the management and execution of these programs.

At the table with me today are three of the key R&D personnel who helped to formulate the budget. They are: Mr. Gerald A. Cann, my Principal Deputy, Vice Admiral Robert R. Monroe, Director, Research, Development, Test and Evaluation for the Chief of Naval Operations, and Brigadier General Eugene B. Russell, Deputy Chief of Staff for Research, Development, and Studies, U.S. Marines Corps. They will be happy to provide information as requested in support of this statement and in response to your questions.

In my presentation today I fully intend to honor the commitment I made to Congress last year to be completely forthright and candid. I will briefly discuss not only certain accomplishments but a few problems, unresolved issues, and areas where we need your particular support and assistance. I would like to begin my testimony by telling you about some of the more important management actions we have taken during the past year to reduce the time and cost of acquiring new systems. I will then say a few words about the RDT&E implications of the Falkland Islands war, about our international programs, and, lastly, give you a summary overview of our RDT&E plans and programs for fiscal year 1984.

B. OVERVIEW OF MANAGEMENT IMPROVEMENTS

I am pleased to report substantial progress in our efforts to improve planning, programing, and execution of our acquisition programs. The main objective of our management initiatives is to reduce the time and cost of acquiring new systems. At the same time we want to deliver new systems to the operational forces that are better supported from a logistics viewpoint and that can be readily operated and maintained by our military personnel. We are beginning to see the results of these initiatives in such programs as the D–5 strategic missile program, our aircraft programs, the 5" Guided Projectile development, the development of a standard family of computers and processors, and in the Harm and Tomahawk missile programs.

Although it has taken more time than many of us have liked to revise and streamline the DOD and SECNAV Directives and Instructions so that they reflect the Weinberger-Carlucci decisions and initiatives, these policies and practices have been observed and implemented in our day-to-day program reviews, decisions, and in our planning, programing, and budgeting activities of the past year.

We devoted much attention to the review of the threats confronting our naval and amphibious forces, to both the immediate and longer-term technical problems, deficiencies, and needs of the fleet and the Marine Corps, and to congressional and OSD concerns, views, and guidance as we updated our plans and budget requests for fiscal year 1984.

One of our most important tasks has been to reduce the total number of Research and Development projects being pursued so that we can concentrate our available resources on the highest priority developments. It is, of course, difficult to defer the start of a new R&D project that promises to make a real contribution to the fleet. It is even more difficult to terminate a project in which one has already invested heavily, and which has a strong constituency.

In the past there was a tendency to avoid these hard decisions. It was easier or more expedient to stretch-out programs than to defer or terminate them. This led to frequent changes in program plans and budgets, program instabilities, the stretch-out of developments, cost growth, inefficient rates of follow-on production, and the early technological obsolescence of the systems finally delivered to the fleet.

This is why we have devoted so much effort again this year to the task of further reducing the number of our Research & Development projects. For the second year in a row we can report a decrease in the number of RDT&E projects. We began last year's planning, programing and budgeting cycle with some 532 Research and Development projects. This year, we started with 521. After detailed review, we terminated another 38 projects, deferred the start of 18, consolidated 13 others, and approved 55 new starts—most of which are relatively small projects that address very important fleet needs. This resulted in a net reduction of 14 projects. Thus, we will have 507 projects in fiscal year 1984.

Paralleling this effort, we have improved the planning and management of our Technology Base programs, and have taken other steps to reduce the time and costs of developing, testing and evaluating new systems. For example, we accelerated the introduction of such high priority projects as the D–5 strategic missile into the Trident II submarine. Over the life of the program this is expected to result in a saving or cost avoidance of about $800 million. We have also strongly supported selected standardization initiatives such as the development of a family of computers, which includes the AN/AYK–14 and the UYK–43/44 computers. These units can be employed in many new systems and platforms, and standardization should result in large savings not only in development and production costs, but in follow-on support and training costs.

In the Program Management Proposal process we have introduced more stringent controls over the scheduling and approval of requirement changes, contract specification changes, and engineering design changes that are likely to increase the costs and/or delay the completion of acquisition programs. These changes have already had a substantial impact upon plans and programs to improve our aircraft and missile developments. Only the most critical improvements have been approved this year.

At the same time we have continued our efforts to: obtain more realistic and accurate cost estimates for proposed new projects; program adequate funds to carry out our major acquisition projects efficiently; realize the benefits of competition; develop second sources for important projects; and, take advantage of Preplanned Product Improvement (R^3I) initiatives.

We have also taken concrete steps to improve the Navy's higher level engineering and acquisition plans for selecting, scheduling, and integrating the many new subsystem developments that will become the electronic combat systems of our aircraft, ships and submarines.

People are, of course, the key to the success of all these management improvement activities and initiatives, particularly the people in our Program Management Offices who have been delegated the responsibility for the planning, direction and execution of our RDT&E programs. We have, therefore, taken additional steps to insure that only the most able and qualified managers are selected for these positions.

The most important message I want to convey to you is that we are not continuing "business-as-usual." We fully recognize the need to seek improvements, economies and efficiencies in all our operations and activities, and we are aggressively pursuing many initiatives to attain these objectives.

Funding for ship contract design

Last year we requested that ship contract design funding be transferred from RDT&E to SCN. Although the final decision of Congress was to continue budgeting for Ship Contract Design within the RDT&E appropriation in fiscal year 1983, I wish again to request that future funds for such work be provided in the SCN appropriation. Such work is not RDT&E since its purpose is neither to advance knowledge nor the state of technology of ship design. Rather it involves the more prosaic, but absolutely essential effort of preparing shipbuilding specifications and drawing sufficient for a shipbuilder to make a sound estimate of a ship's cost and building schedule. The work draws upon standardized general specifications and existing commercial, federal, and military specifications, knowledge, and proven design practices. Possible misunderstandings can be avoided and management economies attained by including funds for ship contract design in the same appropriation, SCN, which already supports ship detail design work. The line of demarcation between ship contract design and detail design has necessarily become less distinct as the Navy has improved the ship design process, and split funding for such work remains a serious anomaly and obstacle to further progress and economies.

Now I wish to say a few words about the RDT&E implications of the recent Falkland Islands' war.

Falkland lessons learned

With the cooperation of the United Kingdom and in tandem with a broad, longer term OSD effort, we recently completed a study of the Falkland Islands' conflict which has been discussed by the Secretary of the Navy in earlier testimony. After extensive analysis, we have concluded that the U.S. Navy and Marine Corps team would have been well prepared for a similar challenge. Most of what happened strongly supports the assumptions that underlie our plans and programs. I would like to highlight just two areas which have the greatest applicability for research and development: defense in depth and ship survivability.

The Argentine use of Exocet anti-ship missiles has reinforced our efforts to correct known deficiencies in both Area Air Defense and Anti-Ship Missile Defense. We need to accelerate improvements in both active and passive defense systems. Additionally, we are making a major effort to develop improved fuzing systems for missiles and other weapons.

With respect to ship survivability, we cannot assume that our defense will be impenetrable. Naval ships must be designed and built to withstand substantial damage and continue to fight. Thus, we are continuing our strong investment in the three areas that contribute most to ship survivability: ship design, damage control, and personnel protection.

The South Atlantic conflict also indicates that we should continue to support and strengthen our efforts to improve our shallow water antisubmarine warfare operations and weapons performance; to develop integrated, secure tactical and data communications systems for joint Service use; and to obtain effective mine countermeasures.

In short, the continuous and timely modernization and upgrading of shipboard offensive and defensive capabilities is absolutely essential in order to ensure that our forces will be able to engage in combat, survive enemy attacks, and ultimately defeat an enemy that is equipped with modern weapons.

International programs

The impact of U.S. technology on the military successes of our allies and the potential capabilities of our adversaries have received much attention during the past year. Navy developed systems, such as the Sidewinder missile, played major roles in both the Middle East and Falklands crises. Not surprisingly, these events underscore the goal of the Navy R&D organization to develop and maintain a lead in the technology employed by the U.S. and its allies over that of the Soviet Union and the countries that obtain arms from the Suviet Union.

A basic tenet of our cooperative programs is that a military quid pro quo exists and that the business aspects must be fundamentally sound. Two basic methods used for international cooperation are co-developments and foreign weapon evaluations. Both contribute to standardization of equipment and/or more cost effective R&D investments. In co-developments we carry our formal cooperative agreements that include cost sharing. The foreign weapons evaluation program, on the other hand, assesses the suitability of foreign systems for meeting U.S. Navy and Marine Corps requirements. Such systems can sometimes significantly reduce acquisition time and save development costs. Currently 14 systems are in development or evaluation under the co-development and foreign weapon evaluation programs. These efforts are complemented by information sharing and scientist exchange agreements that exist with many of our allied countries.

Fleet needs

I have read Congressman Daniel's report of his visit to the Sixth Fleet last fall and have paid particular attention to those problem areas that were highlighted that research and development can address. The Navy R&D Program that has been presented to you by the President addresses these Fleet deficiencies, and I assure you that I will continue to press the R&D community to continue to focus upon the needs of the Fleet rather than technological odysseys which have at times captured our efforts in the past. In particular, with regard to the Congressman Daniel report, the R&D Program before you dramatically increases the long-range offensive strike capability of our surface units through the Tomahawk Missile-capable Vertical Launcher Program and the Tomahawk Missile Development Program itself. Also, we have embarked upon a program to address the deficiencies demonstrated at sea with the Phalanx Close-In Weapon System. With the Outer Air Battle Missile initiative, we are pursuing an effective counter to the Soviet Naval Aviation (SNA) threat, and JTIDS seeks to address the communications inadequacies so often cited in this report and other reports coming directly from the Fleet.

Four major program thrusts

Before getting into the overview of our RDT&E programs, I would like to highlight for you four planned major program thrusts.

Outer Air Battle (OAB) Program.—A comprehensive review or our AAW defenses in depth clearly indicates that we should start concentrating on knocking down the missile shooters before they can successfully launch their cruise missiles. We are prepared to discuss this program in detail and will submit for the record our final report of the Outer Air Battle Study which should be completed by 15 June.

Submarine Warfare.—The maintenance of our nuclear attack submarine advantage in ASW is of paramount importance. We have structured a technology program to support the design of a new SSN. The primary emphasis in this program is on improved machinery, quieting and improved combat systems. After lengthy definition efforts, the SUBACS Program has been carefully laid out to develop the desired new combat system using an evolutionary approach between now and 1989. This program will provide the vital improvements necessary to maintain the combat superiority of future U.S. submarines as well as the fiscal year 1983–89 SSN 688 Class.

JVX.—A significant accomplishment was the tri-service agreement to develop the JVX. The Navy, as the executive agent, will be responsible for the system which will provide vertical takeoff and landing capability for some five missions across the three services. The initial program is a 24 month advanced development phase which is due to go under contract in early April.

Tomahawk.—During a comprehensive reexamination of the Tomahawk program we found that there were some serious deficiencies. As a result, we have restructured the program. This restructured program has been briefed to several committee members and staff people. It is expected that the major difficulties are now behind us.

C. RDT&E PROGRAM

Science and Technology—As I mentioned earlier, actions have been taken to improve the selection, planning and management of our Technology Base programs. Specifically, more focus is being placed upon technology efforts that will contribute to the solution of known fleet technical problems and needs. At the same time, we are being more discriminating in the selection and support of those investigations and exploratory developments that may result in revolutionary increases in future naval capabilities.

We are also working hard to coordinate and integrate our Technology Base plans and programs more effectively with those of other Services and government agencies, and with those of industry which include the work supported by IR&D funds. The Navy has also played a leading role in revitalizing the health of university research through a very successful graduate fellowship program and through the DOD university research instrumentation program, which is to be continued over the next four years.

The Navy is implementing, in concert with the Under Secretary for Defense Research and Engineering, a program to support fully the objectives of Public Law 97-219, the Small Business Innovative Development Act. The potential benefits of this work are great.

In 1984 we plan to continue, and in many cases to expand, the support of Technology Base programs in the following disciplines and areas of work: acoustic arrays for under sea surveillance, radio frequency surveillance, communications technology, command and control technology, information processing, weaponry technology, fluid dynamics, vehicle construction materials, chemical and biological defense, and electronic and electro-optical materials and circuitry.

Such work is absolutely vital if we are to maintain our technological advantages. I therefore urge your support of the Technology Base programs.

Strategic Programs.—During the past year, the key initiative in the strategic offense area has resulted from the conclusion and decision that the most efficient and economical way to introduce the D-5 missile into Trident submarines is through the installation of the system into the ninth, rather than the thirteenth, boat. This decision has the effect of a cost avoidance of about $800 million over the life of the program. To achieve this goal, we must accelerate the various parts of the weapon system development six months because of the concurrency of the shipbuilding and weapon development programs. We believe the risk to achieve this is small.

The development of the Trident II system which includes the D-5 missile, a parallel development of a warhead, reentry vehicle, and the ship portion of the weapon system, accounts for 18.3 percent of the total Navy R&D budget for fiscal year 1984 and reaches a high of 22 percent in fiscal year 1985 and fiscal year 1986. When all the other related strategic R&D efforts, Trident I and communications are added to the Trident II program, the strategic percentage of the total Navy R&D program increases to 21 percent for fiscal year 1984 and 24 percent for fiscal year 1985 and fiscal year 1986.

The issues in the D-5 development that remain to be resolved are: the yield requirements of the warhead, reentry body configuration, the need for penetration aids, what types of penetration aids, if needed, and in what time frame. The outcome of these issues could affect the Navy budget as it currently is proposed.

As a result of the Joint Service/OSD/JCS Strategic Connectivity Study completed last year, the Navy is moving rapidly to achieve an operational ELF Broadcast capability to all submarines. Contracts have been awarded for upgrade of the existing transmitter in Wisconsin, and for installation of a second transmitter at K. I. Sawyer Air Force Base in Michigan. Several submarines are now successful using the signal from the experimental transmitter, and continuing scientific studies show no detectable environmental impact. The electromagnetic field strength in proximity to the ELF transmitter is somewhat less than the induction field strength associated with a small electrical power substation. Nevertheless, Michigan and Wisconsin technical institutions are helping the Navy to monitor the possible effects on the environment.

Additionally, we are negotiating for the ECX replacement aircraft for the TACAMO EC-130Q. We are progressing with an Extremely High Frequency (EHF) transponder which, together with the joint EHF terminal development, will augment the submarine report-back capability as directed by the OSD report on strategic connectivity.

Because of technical and hardware quality problems, as I stated earlier, it became necessary to restructure the Tomahawk program. The restructuring does not affect the Air Force Ground Launched Cruise Missile (GLCM) or the Navy's Nuclear Land Attack Missile (TLAM/N) priorities or deployment schedule. The restructuring primarily has resulted in a decision to deploy the Conventional Land Attack Missile (TLAM/C) in Two blocks: the Block I, as an initial loadout on the Battleship New Jersey in 1983, with a Block II IOC in 1985. The effect on the Anti-ship Missile (TASM) is to shift the IOC from 1982 to 1983.

In restructuring the Tomahawk program, the management and acquisition approach has been changed from that of acquiring a large number of sub-systems and providing GFE, to that of managing prime contracts. We have chosen General Dynamics as the prime contractor for the "ALL UP ROUND" and are currently in the process of selecting a prime contractor for the integration of the Tomahawk system.

To bring the technical problems under control and to implement the fixes that are required in the quality assurance and system engineering area, the program required an addition of $39.4M and $95.8M in R&D in fiscal year 1983 and fiscal year 1984 respectively.

Air programs

The Secretary of the Navy and I are aggressively pursuing a major initiative to control the unit cost of our aircraft and missiles through a process or review and justification for all engineering change proposals to those systems. This review process is tied to the Aircraft Configuration Master Plan (ACMP) which details the orderly changes to our aircraft for reasons of safety, cost reduction or performance enhancement. All aircraft improvements such as those proposed for the A-6, F-14, P-3, S-3, E-2C, and EA-6B, will be carefully tied to the development schedule for various commodities, e.g., JTIDS, ASPJ, GPS, AMRAAM, etc., and introduced as block changes to the aircraft.

We have completed the operational testing of the F/A-18 strike/fighter, and requested approval from the Secretary of Defense for full rate production of the strike configuration. We are working to correct those discrepancies found during operational testing.

In fiscal year 1984 we are making a major commitment to begin programs to upgrade the A-6, F-14 and P-3 aircraft. Improvements to these aircraft, which include enhanced survivability and greatly enhanced system performance, are necessary to meet the threat.

With regard to training our pilots, we will continue to pursue the purchase and development of the VTXTS trainer and new adversary aircraft.

We continue to accelerate the development of target vehicles to provide the most effective and lowest cost replication of enemy missile capabilities.

Surface warfare

In the Surface Warfare area, there are three programs I would like to touch upon here. I mention these three programs because they are key drivers to the effectiveness of our Surface Warfare capability for the remainder of this century and beyond.

The first of the Surface Warfare keystone programs, the DDG-51 Development Program, addresses the replacement of the workhorse DDG-2 and DDG-37 Classes of guided missile destroyers as well as the eventual replacement of the major battle group assets that will be discussed with regard to the New Threat Upgrade Program. Beginning in the early 1990's, the oldest of our battle group guided missile ships are scheduled for retirement. By the beginning of the next century, the retirement of these ships built during the 1950's and 1960's will be complete. The lead DDG-51 is scheduled for delivery in 1989. After a one-year hiatus, during which the new ship will be put through its paces and evaluated, additional ships will be delivered at the rate of several per year, beginning in 1991. The new destroyer design will embody what is essential and affordable. It should be the most survivable destroyer we have ever built meeting a concern voiced for many years by Congress as well as by knowledgeable individuals both inside and outside of government.

This destroyer's role in support of the carrier battle group dictates that it be equipped with the latest in radar and AAW weapon system technology, namely, a variant of the Aegis system currently installed on our *Ticonderoga* Class Aegis cruisers that is scaled to the destroyer hull. Because DDG-51 will be designed to serve many missions, it will be equipped with the latest in ASW and offensive anti-ship and strike weaponry. In this regard, our newest sonars, the hull-borne AN/SQS-53C, and the passive towed array, AN/SQR-19, will be included plus Vertical Launch ASROC, over-the-side torpedoes and a flight deck for the LAMPS III helicopter. Electronics for LAMPS III will be design-budgeted into the ship. DDG-51's fore and aft vertical launchers will give the ship ample magazine and firepower to carry large numbers of the Tomahawk missile in addition to AAW and ASW rounds which will support this Administration's goal for a Fleet distributed offense. Harpoon missiles in above deck cannisters and a 5-inch gun with Seafire and the guided projectile will round out this diversified general purpose destroyer. It will be able to operate in support of carrier battle groups, surface action groups, or amphibious and underway replenishment groups. To achieve the number of ships required, cost will be scrupulously controlled while maintaining the requisite combat capability.

The second Surface Warfare program that I wish to highlight is the Outer Air Battle Missile program. This effort is the result of an in-depth Navy study under the direction of the Chief of Naval Operations that began in the fall of last year and is nearing completion. All segments of the Navy community including my Office have participated in this task. Attention has been focused on the Navy AAW needs and posture of the 1990's and beyond with emphasis on the all-important outer air battle. The study demonstrates the efficacy of equipping our vertical launch surface ships of the 1990's with a missile capable of destroying enemy bombers at ranges in excess of their weapon release boundaries. We will proceed with development of this advanced surface-ship missile system using the funding line called "SM-3 Missile" established last year. Because this weapon will demand a guidance system fundamentally different from the current Standard Missile, we will integrate the multimode guidance work being performed under the Navy's "Army/Navy SAM" line into this missile development program. This new outer air battle capability combined with the improvements coming out of the study in other areas such as deception and counter-countermeasures, surveillance and early warning, and aircraft weapon systems will greatly enhance the AAW capabilities of the fleet.

The final Surface Warfare program that I wish to emphasize is the New Threat Upgrade program commonly referred to as NTU. This program is a significant AAW combat system upgrade for the major units of our existing battle group-capable missile destroyer and cruiser Fleet. Included in the baseline NTU program are twenty-two of the extended-range *Terrier* missile ships and ten of the medium-range *Tartar* missile ships. We are currently assessing the cost effectiveness of expanding the Program to embrace the DDG-37 Class *Terrier* ships which would increase the total ships upgraded to forty-one. Central to the Program is a thorough modernization of the AN/SPS-48 3D search, weapon control radar. Also included are improvements to the AN/SPS-49 2D long-range air-search radar that incorporates automatic detect and track capability, the addition of ship system sensor correlation, launcher and fire-control modifications software changes and system integration to accommodate the Standard Missile-2 and sub-system modernizations and, finally, necessary component reliability improvements. The NTU system is currently undergoing OPEVAL aboard the USS *Mahan* with the full production decision scheduled for the fall of this year. Ship overhauls for the baseline program will commence in fiscal year 1986 and continue through fiscal year 1992. With the completion of this Program, our existing major battle group Fleet assets will be equipped to combat the Soviert Backfire/AS-4 threat in a radar-jamming environment with a significant system reaction time improvement.

In addition to the three surface warfare programs just mentioned, there is another program of considerable congressional interest that I want to bring to your attention. In accordance with congressional direction, the Navy is proceeding with the MK-92 Fire Control System Upgrade program. An RFP was issued, sole source to Sperry, on November 4, 1982. Sperry's proposal was received February 23, 1983, and is now under evaluation in the Naval Sea Systems Command. The evaluation is due to be completed April 4, 1983. Funding for this Phase III Four Face Phased Array rader mod has been included in the Navy budget based on in-house Navy estimates of cost. Until the contractor's poroposal is evaluated, the actual costs estimated by the contractor will not be known.

Mine warfare

Both our offensive and defensive capabilities will provide a valuable complement to our defense in-depth approach to anti-submarine warfare. Major offensive mining developments which are close to Fleet introduction are the "Quickstrike" series and the Submarine Launched Mobile Mine (SLMM). The SLMM utilizes the submarine MK-37 torpedo propulsion system, which provides a covert standoff mining capability. The new Quickstrike mine series consists of highly sophisticated air-delivered mines with greatly improved countermeasures resistance.

Defensive mining refers to the mining of international waters and choke points not controlled by either belligerent. The recently introduced Captor mine is the key element of our defensive mine arsenal. Captor uses an encapsulated torpedo that can take the mine to the enemy submarine. It is, therefore, a powerful complement to our other ASW forces.

Since the Soviet Union possesses the largest mine stockpile in the world and the largest force to deliver mines, our efforts in Mine Countermeasures are of great importance. To counter this threat, we are building both high-mix (MCM) and low-mix (MSH) mine countermeasure ships, and the new Super Sea Stallion MH-53E to complement our existing platforms. The new platforms will be state-of-the art for mine-hunting and/or minesweeping. For example, The USS *Avenger* (the MCM-1) was placed under contract on June 29, 1982 and will have a variable depth sonar (VDS) to hunt mines and a remotely-controlled underwater vehicle to neutralize moored as well as bottom (ground) mines.

Antisubmarine warfare

Improvements in the Soviet submarine threat continue to provide strong impetus to our ASW development programs. Current submarine classes are faster, quieter, and deeper diving than ever before. They present more difficult targets for our sensors and weapons while constituting an ever more serious threat to our Naval forces. If we are to retain our current advantage in ASW, we must match these developments with improvements in every area of ASW, and that is precisely what we are striving for.

We are just about to enter production on the SQS-53B hull-mounted sonar and the SQR-19 Tactical Towed Array Sonar (TACTAS), two systems which will significantly improve the ability of our surface ASW units to detect and track submarine targets. The development of the SQS-53C will further improve the active detection capability necessary to counter the extremely quiet threat classes now being deployed. Expendable Reliable Acoustic Path Sonobuoy (ERAPS) will provide an active detection capability for our airborne ASW forces far superior to anything currently available, and development of a new carrier-based ASW helicopter will provide the flexibility and responsiveness so valuable in the inner zone. The computational power necessary to do more advanced acoustic processing is being provided by the UYS-1 Acoustic Signal Processor today and will be enhanced by Very High Speed Integrated Circuits (VHSIC) technology and the UYS-2 Enhanced Modular Signal Processor (EMSP) in the next few years.

We are also making sure we have the capability of defeating the submarine once we detect it. The MK-50 Advanced Light Weight Torpedo (ALWT) for surface or air launch, having recently overcome some significant technical problems in early developmental testing, is now proceeding toward a Milestone II decision. The MK-48 ADCAP torpedo for submarine launch is proceeding on schedule. The Submarine ASW Standoff Weapon program has been restructured and approved. We are also proceeding with the Vertical Launch Anti-Submarine Rocket (VLA) development with a goal of deploying it concurrently with the first Vertical Launch System (VLS) backfit on surface ships.

To meet the increasing Soviet submarine threat we are agressively pursuing improvements to our SSN-688 Class attack submarine. We are adding a Tomahawk vertical launch system to improve the SSN-688 weapons capability. We are planning for significant improvements in quieting and sensor capabilities for introduction later this decade. However, because of 688 Class space and weight limitations we are constrained in the improvements that can be made. The Submarine Advanced Combat System (SUBACS) will tie together the improvements and sensors, using a top-down functional design and make space to allow further improvements. SUBACS will incorporate a distributed computer architecture and achieve greatly improved availability, operability and reduced life cycle costs. The SUBACS program has been structured into an evolutionary or phased approach which permits the timely introduction of the major improvements as they become available. Despite these actions to improve the SSN-688 class submarines, Soviet submarine capabilities are projected to exceed the combat capability of the 688 class in the next decade. Consequently, the Navy is developing design options and conducting feasibility studies for a new design attack submarine class which will permit the introduction of improvements beyond those attainable with the SSN-688 class. Major improvements in propulsion, quieting, sensors, and weapons capabilities are planned. An integrated research and development program has been developed to support the introduction of a new design SSN with the fiscal year 1989 ship authorization. Although limited funding has been included in fiscal year 1983 and fiscal year 1984 budgets to pursue key technology for a new design SSN, the major research and development effort is expected to commence following evaluation of the design options and feasibility studies and will be included with the President's fiscal year 1985 budget request.

Command, control, communications, and intelligence

Three major strategic communication efforts ELF, ECX, and EHF were initiated and/or accelerated in 1982 as a result of the Joint Service/JCS/OSD strategic connectivity review conducted by direction of the President in 1981. These efforts are described earlier in the strategic section.

ITSS.—In the tactical area, the Integrated Tactical Surveillance System (ITSS) study of ways to improve the Navy's long range reconnaissance, surveillance and target acquisition capability was completed during the past year. A number of alternative mixes of sensors and command and control systems were examined and the following actions have been initiated:

A relocatable Over-the-Horizon (OTH) Radar system configuration has been selected. Assuming a successful OPEVAL, several units may be built to cover several critical ocean gaps and choke points around the world. Our efforts will build upon the WARF and USAF OTH-B program experience to realize an early capability.

Evaluation of specific space-based radar approaches and other non-space options (e.g., remotely piloted vehicles) for the satisfaction of Navy surveillance needs.

Additionally, the ITSS study has lent emphasis to a number of C^3 improvement programs which, while not being programmatically a part of ITSS, are nevertheless extremely important for the processing and dissemination of the ITSS product. These are the OSIS Baseline Upgrade, Link 11 Improvement program, NTDS upgrade and the Afloat Correlation efforts.

NAVSTAR GPS—Installation and evaluation of NAVSTAR GPS prototype user equipments in various environments and initial operational test and evalution continues. Using engineering development model terminals with the orbiting 5-satellite R&D constellation, we will gain valuable maritime operational experience during the solid shield and ocean safari exercises in the spring of this year. Reduction of platform position uncertainties using NAVSTAR GPS is expected to have dramatic operational impact, particularly in the surveillance and targeting applications. Formal operational test and evaluation will be completed during 1983 leading to a Defense Systems Acquisition Review Council (DSARC) III production decision in May 1984. Assuming DSARC approval, design of the interfaces and modification to support the installation of GPS in a wide range of Navy platforms will commence.

JTIDS.—Following a successful DSARC-IIB, the Navy Distributed Time Division Multiple Access (DTDMA) JTIDS System has been competitively transitioned to Full Scale Development, with the first Battle Group to be equipped for conduct of Operational Test and Evaluation in fiscal year 1987. The system will provide high capacity anti-jam voice and data communications, relative navigation, and identification via multiple nets between ships and aircraft within and beyond radio line-of-sight with relay changes. The Navy remains strongly committed to the DTDMA JTIDS program as a major cornerstone of our Fleet readiness effort. The advanced DTDMA technology is required to provide the flexible multi-net anti-jam secure and high capacity exchange of information between surface and air platforms into the 1990's.

Embedded computers

Embedded computers play a crucial role in over 400 types of weapons, command and control, intelligence, and other mission critical systems aboard ship, aircraft, and ashore. They provide the flexibility and adaptability to allow our systems to exploit quickly new techniques as force mutipliers and to counter new and evolving threats.

Since 1978 the Navy has been applying a coordinated, intensified management focus to this important area in order to make most effective use of emerging technologies from industry while minimizing acquisition and life cycle support costs and maximizing logistics supportability. Because of the positive results obtained, we intend to sustain this focus. The status and results of several specific embedded computer programs are worth mentioning.

We have formulated an improved acquisition strategy for a second source for an AN/AYK-14 standard airborne computer. This strategy will allow a competitively selected, fully independent contractor to develop and manufacture AYK-14 computers in competition with the primary AYK-14 source by 1986 or earlier. In addition, an aggessive product improvement program has been established.

We are proceeding on schedule with the development of our new AN-UYK-43 and AN/UYK-44 embedded computers. These computers will replace our existing standard AN/UYK-7 and AN/UYK-20, providing much needed, significant improvements in performance, reliability, and maintainability. We have been able to accelerate the production decision milestone of the UYK-43 program by six months, and I anticipate contract awards based on competitive development phases for production of both the UYK-43 and the UYK-44 by April of this year. Thanks to this progress, the DDG-51 combat system has been able to commit to the UYK-43 as the first major customer. The UYK-44 has already been selected by a number of programs including the SOS-53C sonar and ELF.

The AN/UYS-2 Enhanced Modular Signal Processor enters full scale development this year after a competitive critical item demonstration phase. The AN/UYS-2 will be a high technology, high throughput programmable signal processor with a modular architecture to allow support of a variety of sensor system applications with varying throughput and capacity requirements. The AN/UYS-2, the successor to the AN/UYS-1 that is just being deployed in a variety of key antisubmarine warfare platforms, will also be one of the first users of the Very High Speed Integrated Circuit (VHSIC) program.

Electronic Warfare.—During the past year we have commenced a comprehensive and concentrated thrust in Navy Electronic Warfare (EW). This effort has included both near-term and long-term actions to enhance our EW capabilities and to integrate EW as high leverage component in a hardkill/softkill strategy in each of the warfare areas. This will result in a growth of EW work to provide increased effectiveness in both our offensive and defensive operations and capabilities.

Near-term efforts are concentrated on upgrading self-protection capabilities to cope with increasingly sophisticated threats. Systems such as the AN/ALR-67, AN/ALQ-162 and AN/ALQ-126B for tactical aircraft and upgrades of shipboard systems such as the AN/SLQ-32 and SLQ-17 will improve our capabilities against missile threats likely to be encountered in areas around the globe.

Long term plans emphasize offboard techniques with generic applicability to be utilized in cooperative operations of multiple platforms. This new direction will apply not only in anti-shipping missile defense and aircraft self-protection, but also in C^3 countermeasures for counter targeting and strike support. In addition, the individual electronic warfare devices will be coordinated in operations to support the overall force objectives. In support of these long term plans we are now developing EW equipment and operational concepts designed to shrink the enemy's weapons employment envelope, especially in the outer air battle, while maximizing the engagement envelope for our own forces. This is part of an overall push to utilize our EW capability as an offensive asset and to be prepared to operate effectively in an intense EW environment.

Amphibious assault

Of great concern to the Marine Corps is their aging medium assault force. The continued development of the JVX is critical to avert a medium assault lift shortfall in the 1990's. The Navy now has the lead on the Advanced Vertical Lift Aircraft (JVX). The Joint Services Operational Requirements document has been completed. JVX is to satisfy the four Services' mission of Marine Medium Assault Transport, Navy Combat Search and Rescue, Air Force Combat Search and Rescue and Special Operations, and Army Special Mission Electronics Aircraft. The Marine Corps is also continuing in a joint effort with the Army to fulfill requirements for direct fire support and mobility through the joint Light Armored Vehicle program. Production contracts for the 25mm gun variant were let last year. Development work on other Marine "mission role vehicles" continues. The Mobile Protected Gun System merged separate Marine Corps and Army programs for a modern agile vehicle with substantial firepower provided by a high technology hypervelocity gun development. I strongly support joint programs. They offer additional management challenges but represent the most economic approach and, given the proper support in Congress and at the policy level in DOD, can succeed. General Russell will discuss Marine Corps Research and Development programs in detail in his statement.

Closing remarks

I respectfully ask that you support the full budget DON RDT&E request before you. The budget is our best appraisal of what it will cost in fiscal year 1984 to execute our RDT&E plans. We are fully committed to satisfying the President's national security objectives. The budget is based upon a coherent national strategy and reflects a prudent balance of activities and programs which address both the near-term and the longer-term needs of our operational forces.

Our commitment to force modernization and readiness as well as to reforms in the R&D/Procurement Cycle to shorten the time and cost of acquiring new systems is firm. We will, of course, be pleased to provide additional information on our plans and programs. More details on our RDT&E programs will be found in the Supporting Data Books provided along with the budget submission to the Congress.

Thank you. I am prepared to respond to your questions.

STATEMENT OF GERALD A. CANN, PRINCIPAL DEPUY ASSISTANT SECRETARY OF THE NAVY (RESEARCH, ENGINEERING AND SYSTEMS)

Mr. CANN. Mr. Chairman, I am going to make a number of comments about some ASW programs. When the session becomes closed we will talk about some of the details as to the why's.

I would like to make one comment generally and that is contrary to some of the reports about ASW, and so forth, the fundamental problem of detection, classification, and attacking potential enemy submarines is getting even more difficult than it has been in the past.

Even though we have put an enormous amount of effort in the ASW problem and been successful, the other potential adversaries are not standing still and have learned a great deal about the art of improving submarine design and the tactics to use them. We can talk more about those kinds of issues in a closed session.

LAMPS III

You have asked questions about the LAMPS program. First, let me talk about LAMPS III.

LAMPS III is part of a weapon system. It is part of an effort that started some 10 years ago to take and give the surface ship the kind of standoff capability required to give them protection against at least torpedo firing submarines and to give them a capability to be able to attack cruise missile firing submarines without having to sit there and absorb the impact of those weapons without any defenses.

The result of that effort has been a coupling together of three programs, tactical towed array [TACTAS] program, LAMPS III program, and the ships that have the SQS-53 sonar which gives us in some cases capability out to the convergence zone. Those first three programs not only are tied together from a conceptual point of view, but in many cases they share processing and display capability.

The LAMPS III program which successfully completed its development and is now in production is a fundamental improvement to the surface Navy in terms of giving it a standoff weapon delivery capability.

Now, in order to meet the needs of the fleet it became obvious that the LAMPS program would take time to get into the fleet, and there are certain classes of ships that will not have the LAMPS III, for example, the DD-1052 class will never get the LAMPS III, it is an older class of ASW destroyer and some of the FFG-7s will not get the LAMPS III. We made the decision that we should give a lesser capability, but still a significant capability to those ships by putting the LAMPS I helicopters on them. To that end because of the ability of the Kaman Corp., we have been able fortunately to reopen that line and have been producing those helicopters.

There is a definite requirement to have a force level of about 168 aircraft to support 135 active and reserve LAMPS Mark I capable ships. Fifty-four of those helicopters are required for FFG-7s which will be in the reserve fleet.

SSN I

With respect to the new SSN I think some clarification is required and we really need to talk about the why's and wherefores in closed session, but what we are basically attempting to do in the new SSN effort is to make sure that all the technologies are in place so that the Chief of Naval Operations, the Secretary of the Navy, and Congress together can make a complete and informed decision about the approach we should go with for the next submarine.

We have taken the most important efforts that are representative of new submarine technology and bundled them together in our own planning. These programs are ongoing, they are not new starts. These are programs in propulsion, sonar, and quieting, coating, and so forth, and we have taken those and bundled them together, 350 million dollars' worth of effort.

We are trying now to coalesce those to the point where we have picked the ones that will impact on the new submarine and make sure they are complete so that as the various conceptual design studies go forward we will understand in the decision process when they will be available, how much money we have to put into them to make them meet the first ship anticipated right now, that potential for a new ship, what one could call a new ship start would be possibly in the fiscal year 1985 budget.

Work up to that point is all technology effort and conceptual design effort leading to a fundamental decision.

With respect to our torpedo programs, the advanced lightweight torpedoes——

Senator COHEN. Is 1985 the year you meant?

Mr. CANN. Yes, in 1984 the work that is going on is continuation of the conceptualization and various design efforts and technology efforts to bring this submarine forward to a decision.

I should also point out that the decision process is not a finitely bounded point. We are already doing many things that are leading to a decision. And whether that decision becomes one in 1984, the end of 1984, middle of 1984, or 1985, is one that will be obviously shared with everybody. It is not a finite effort.

The first major funding for a new SSN will probably be in the fiscal year 1985 budget separate from the technology efforts that are ongoing.

ADVANCED LIGHTWEIGHT TORPEDO

With respect to the advanced lightweight torpedo, I feel it necessary to point out that we have a very large number of platforms: naval air, which is the entire P-3 community, S-3 community, the LAMPS. All of these assets require a lightweight torpedo, plus your surface ships depend on the lightweight torpedo as a fundamental weapon.

All those platforms currently depend on the Mark 46 torpedo. It is the primary, with very few exceptions, ASW weapon. We started this advanced lightweight torpedo some time ago through a technology program. It is now in advanced development.

It has had some difficulties in the last year getting through its advanced development, but I am happy to tell you that we believe, based on the recent testing, that the advanced lightweight torpedo will go to full-scale development this summer and the technical issues we had in the propulsion area have been solved. In the last few weeks we have had all up torpedo runs which have been very successful.

ADCAP PROGRAM

With respect to the ADCAP program which is the improvement to the Mark 48 torpedo to give it the capability to go faster, deeper and provide basic detection capability, and again it is the only nonnuclear weapon for all of our submarines, it is moving along very well in the development program. As a matter of fact, the testing has gone along more rapidly than our current schedule and the data all appear to be very good. We are very pleased that that program is moving ahead. That is all I have to discuss.

Mr. **Paisley**. With that, I would like to have Admiral Monroe pick up the next two subjects.

STATEMENT OF VICE ADM. ROBERT P. MONROE, U.S. NAVY DIRECTOR (NAVY RESEARCH, DEVELOPMENT, TEST, AND EVALUATION)

Admiral **Monroe**. Mr. Chairman, if I may, I will talk first about the SH–60F carrier-based ASW helicopter progran; and then address the whole broad issue of antiship missile defense, the systems we have for defense, the types of testing we do, and the targets we test against.

SH–60F CARRIER BASED ASW HELICOPTER

First, on the carrier-based ASW helicopter, what we are talking about is really our last line of defense against enemy submarines attacking our battle groups. We try to establish defense in depth, and engage and kill submarines thousands of miles or hundreds of miles or tens of miles away from the battle group.

However, once the surviving submarines leak through and reach the vicinity of the battle group, as some will, we depend upon this carrier-based helicopter—generally in a squadron of six on each carrier with an active dipping sonar to detect, localize, and attack.

This is an extremely effective system. Our submariners who exercise against these helos don't like them at all, because they don't know where the helo is until suddenly they hear the ping and the attack signal.

Their effectiveness is based on their great mobility. They can move from spot to spot within the inner confines of the battle group extending tens of miles from the carrier. They are a quick reaction system. From a spot on deck they can be off to a dip on a threatening submarine in a very few minutes. They have an active sonar; and I want to take a minute to discuss this.

Most of our ASW systems are passive: Our SSN's our towed arrays for destroyers—the ASQR–19 which Mr. Cann was talking about—the P-3C long range patrol aircraft, the S-3A carrier-based aircraft, the LAMPS I and LAMPS III systems, the SOSUS underwater sound system and others. Most of the Navy ASW systems are passive.

However, once the enemy submarine gets through to the vicinity of the battle group, passive systems don't work well; too much noise in the water from the machinery and screws from our ships. We have found that you have to have active sonar, sending out pings. If that is in a surface ship, the ship is at risk to the submarine; so it is more effective in a helicopter.

The final point that makes these helicopters so effective is the accuracy of their attacks. They search from a hover. With the dipping sonar they can get the exact range and bearing of the submarine and drop a torpedo from the hover right on the target.

I should add that by having these helicopters on the carriers, we use them for a number of other missions, some of which are absolutely essential, such as plane guards. Every time we operate aircraft we have plane guard helicopters aloft in the vicinity ready to pick aircrews out of the water from any possible aircraft accident, and these helicopters are used for that purpose. Thus, having the helicopters on the carriers, in this number of about six per carrier, is an absolutely essential function.

Now, today we meet this requirement with an aging inventory of about 100 SH-3H Sea King helicopters. These helicopters represent technology of the fifties and sixties. We have upgraded their mission equipment, but the airframes and engines are quite old. We plan to extend the service life of this entire inventory through a SLEP program.

We plan to increase this inventory of existing helicopters by bringing some 20 odd additional basic SH-3's, but a different configuration, SH-3D's, into the SLEP program and make them SH-3H's ASW dippers.

But even with all these actions, by 1989 or 1990, the inventory will drop well below requirement, and it declines at a steep rate after that. So, we feel we have no choice but to replace these helicopters. They are essential for both the dipping sonar role and plane guard role.

Now, aggravating this problem are two significant aspects of the threat. One of them is a change—the increased quieting of the Soviet submarine force. I will go into this more in closed session. The end result is that we expect more of the threat submarines attempting to attack the battle group to leak through into the vicinity of the battle group, where passive systems won't work well against quieter submarines.

The second aspect that makes it so important is the relative ratio in the Soviet submarine force of torpedoes to missiles. They have many more torpedoes than missiles. Again, I will go into this in closed session, but the result is that threat submarines are going to be closing the battle group in order to use those torpedoes which are not launchable from outside this inner zone.

Now, the last point I would make on this program is to describe how we plan to meet this requirement, how we plan to replace the SH-3H's with our SH-60F program.

We are taking our standard, current, highly capable helicopter LAMPS III, the SH-60. We will leave out of the configuration all of the expensive multimission and passive acoustic avionics. We will leave out the radar, the electronic support measures, the passive acoustic processors, the two-way data links, and instead install a standard dipping sonar that is being developed in another development program.

It is a minimal R&D program, simply marrying the dipping sonar to the highly capable LAMPS III helicopter; very low risk. It will result in our having a standard helicopter in the fleet, since by having these helicopters on the carrier—and thus having an intermediate maintenance activity on the carriers—even our LAMPS helicopters on destroyers will work better because they will have the availability of this intermediate maintenance.

With that, if I may, I will leave that subject until we get into closed session and I can get into more detail on the more classified aspects, and go to the question of management of missile defense in ships.

This has, as Mr. Paisley said, been brought into the forefront by the experiences in the Falklands.

Senator COHEN. I notice in Mr. Paisley's statement he indicates on page 7 that "After extensive analysis, we have concluded that the U.S. Navy and Marine Corps team would have been well prepared for a similar challenge."

That does not say very much because I don't view the kind of operation that the Argentines launched against the British to be the kind of magnitude that we are supposed to be prepared for. To say we could have met a similar challenge does not give me very high confidence we have that much greater competence that that statement would indicate.

Mr. PAISLEY. We looked at it from the viewpoint of having to commit a major portion of our forces against an escalated capability of that type——

Senator COHEN. The Argentines had a minimal capability, do you agree?

Mr. PAISLEY. Not necessarily. I think the air threat was a real air threat. It was not minimal. If it had been minimal, they would not have got through like they did.

Senator COHEN. They got through because the British had no air cover to speak of. They also had limited capability on their aircraft carrier.

Mr. PAISLEY. If you are talking about meeting a Soviet threat to be considerably greater than that launched by the Argentines——

Senator COHEN. I am stating that to be well prepared for a similar challenge does not tell me a lot in terms of our capability.

Mr. PAISLEY. What I had in mind when I said that is if the threat would come under a larger air attack, and that is what I mean by similar attack, of much larger magnitude. There wasn't anything in that threat that we saw that we are not prepared to deal with.

There were no surprises in the threat. I will say this, that it reminded us of some things that we know, that we ought to be working a little harder on. Two of them in particular I think.

One of them which Bob is going to address in a minute is one associated with adequate testing with target vehicles, particularly the sea-skimming threat. Fundamental to such a threat coupled with that is having a fuze capability to engage a very low-flying missile. Out of that people ask me what did you get out of all of that review from an R&D viewpoint. I say there are two areas we must get more vigorous in, fuze research and our target vehicle program.

I will have Bob talk a little more on the target program.

ANTISHIP MISSILE DEFENSE SYSTEM

Admiral **Monroe**. I would like to start with a general inventory of our antiship missile defense systems. Of course, the ones that get the greater attention are the large systems like Aegis, which do cover the low-flying, close-in missile, but also cover an extremely large envelope reaching far out, handling extensive jamming, and having supersonic, subsonic, and multiple target capability. I will talk more about Aegis in a moment.

Second, we have a program called the New Threat Upgrade, which improves the capability of our existing missile ships, the Terrier and Tartar ships, to enable them to remain effective at the altitude, speed, and jamming levels to which the threat has migrated.

Once you get into closer range systems—and this area of antiair warfare is analogous to the last ditch ASW defense of the dipping sonar helicopter that I was describing—we have the NATO Sea-Sparrow system which uses Sparrow missiles upgraded to the RIM-7M, monopulse Sparrow, with much greater effectiveness in electronic warfare. We are putting the Target Acquisition System, or TAS, in as the front end of this NATO Seasparrow system on the ships that have the system.

We are well along in development and testing of the 5-inch rolling airframe missile, which is a dual-mode missile. Again, I will talk more in closed session, but the testing to date has shown this system to be remarkably effective. Prior to the Falklands we probably were indecisive as to whether to go into production on this missile after we had developed it. We now are quite firm about that.

The close-in weapons system, the Vulcan-Phalanx, a high-rate-of-fire gun, is not only being put in our ships more rapidly, but it is being upgraded to give it better attack algorithms, better reliability, better maintainability, and better elevation angle of use.

The SLQ-32 electronic countermeasures system, which is going into ships in large numbers, is extremely quick in its detection of an incoming missile threat, allowing us to place Super RBOC Chaff which is very effective in decoying missiles.

Finally, we are developing the NATO Sea Gnat system. So we have an entire spectrum of antiship missile defenses, which have been funded for 10 years and more, and are moving rapidly through the pipeline and into the fleet today in numbers, as well as being improved.

Let us talk a minute about testing. I will use Aegis as an example. How much you test, when you test, and against what you test, are issues requiring a high degree of judgment. You can easily test something to exhaustion in an R&D stage, hold all production until you finish, and then start in with tooling, long-lead material, and pilot production, and by the time you get the actual production model in the fleet you find you have had to make so many changes to upgrade it to meet the changing threat that what is produced finally is not what was tested at all. So, that is not a good solution.

On the other hand, too little testing is a direct road to disaster. The Government then has to buy every system twice, once when it doesn't work and once again when it does. What you have to do is strike the right balance of testing. Aegis, which has gotten a lot of attention in the press lately, is a good example to use in describing test phases. The balance that was struck in that case was a very reasonable balance in my judgment.

We put the first engineering development model, EDM-1, to sea 8 years ago in the Norton Sound, a test ship that we kept in inventory specifically to test Aegis. We have gotten many tens of thousands of hours of operation of that system at sea.

We have fired over 100 missiles, and again I won't go into the exact number, at targets that range from high supersonic speed to subsonic, from high altitude to low altitude, in jamming environments, against multiple targets, and so on, testing that system and that capability about as well as could be done in that configuration.

Senator **Cohen**. You tested Aegis against a supersonic seaskimming target?

Admiral **Monroe**. I will say no in this open session. I would like to amplify the answer in closed session because it requires a qualified answer.

Senator **Cohen**. It was not clear from your statement a moment ago that you had tested against high-flying supersonic, low-flying subsonic, the combination arrived at was seaskimming supersonic.

Admiral **Monroe**. The question of how low is low——

Mr. **Paisley**. We will cover that definitely, Mr. Chairman.

Admiral **Monroe** [continuing]. Is important to this issue; and what the profile is and how low is that low altitude.

We then developed another engineering development model, EDM-3, and built an entire shore site at Morristown and we have been testing some 7 years at that site with multiple targets and jamming. We do not fire missiles from that shoresite, but it gives you the capability of doing many kinds of testing better than you can do at sea.

This month we are seeing the first Aegis ship *Ticonderoga,* at sea undergoing more realistic tests than have been done before. This is the final phase in knowing exactly what this weapon system will do.

I believe if we had gone from the balance in either direction—that of doing more testing before production, or that of earlier production with less testing, it would have been less effective than the course we are following.

TARGETS

I will close with 1 minute on targets. To develop a target that simulates a threat missile, particularly a newer, higher performance threat missile, is an extremely expensive proposition. Essentially the target has to be as good as the missile, only it has to have a lot more things.

It has to have instrumentation and miss distance indicators. It has to be controllable; and you have to have mechanisms for insuring that at the end of the engagement it doesn't destroy the ship you are shooting from; and you may wish to make it recoverable.

So a target is even more difficult to develop than a threat missile which as you know, is a billion dollar program. We could easily bankrupt ourselves by going overboard with development of targets that exactly simulate every aspect of the threat.

What we try to do is: (1) Have a mix of targets that represents each of the most difficult segments of an enemy missile flight, whether it is low or high altitude, low or high speed, or transition from one regime to the other; (2) test those data points; and (3) use engineering analysis verified by test data for the other limitless possibilities.

We think we have a very good mix of targets. As Mr. Paisley said, we believe the recent changes in the characteristics of Soviet threat missiles are requiring us to develop some new capabilities in targets; and we have some target programs to do this; the Vandal program, and the Supersonic Low Altitude Target program. But the mix we have now is quite capable of allowing us to get an extensive amount of data on the performance of the system.

Mr. **Paisley**. With that, Mr. Chairman, I would like Admiral Nyquist to talk about the DDG-51.

STATEMENT OF REAR ADM. J. W. NYQUIST, U.S. NAVY, DIRECTOR (SURFACE COMBAT SYSTEMS)

Admiral **Nyquist**. Good morning, Mr. Chairman.

I know you have been briefed many times on the emerging Soviet threat and the emergence of the Soviet Navy as a blue water Navy. In preparing for this emerging threat, of course, the fundamental principles of naval warfare have not changed and that is to go to sea and fight at sea and win.

What has changed over time is the level of sophistication required to operate effectively in today's and tomorrow's environment. In these terms, although defense is necessary it is a credible offense that is decisive.

DDG-51

The *Arleigh Burke* destroyer, DDG-51, provides us with the opportunity to enhance this dimension of our deterrent and war-winning capability without sacrificing the other basic surface combatant missions. The ship will do so by providing significantly greater fire power volume deliverable at long range in support of both sea control and power projection roles.

This multipurpose combatant capability is required now and will continue to be needed as we enter the 21st century. the *Arleigh Burke* DDG-51 class is that multimission guided missile destroyer which will replace existing guided missile destroyers which face obsolescence commencing in the late eighties.

She is designed to operate, in addition to operating as a full fledged member of the battle force, with surface action groups or in support of replenishment and amphibious groups.

She is designed with better survivability than her predecessors in vital areas such as combat information center, radio rooms, and magazines located deep within the hull and protected by additional armor.

The ship will combine the best features of current design and newly developed systems. The prime feature of this destroyer is its state-of-the-art multifunction SPY-1D phased array radar four fixed antenna arrays providing long-range multiple detection in clear and hostile environments and I emphasize here capability in a jamming environment.

In addition to the Aegis combat system, additional defense in depth against antiship cruise missiles will include two Phalanx close-in weapon systems and SLQ-32 electronic warfare systems along with decoy launchers.

She has significant ASW capability. She has the SQR-19 integrated tactical towed array sonar and our newest active sonar, the SQS-53C.

In addition to these organic ASW systems, the ship will be able to land, launch, and control the LAMPS Mark III ASW helicopter. Long-range strike and antisurface warfare capability will be provided by vertically launched Tomahawk and Canister-launched Harpoon missiles.

Semiactive laser guided projectiles will enhance naval gunfire support operations and close-in surface engagement. We strongly believe that the DDG-51 is designed as the multimission surface combatant of the future which best incorporates the balance between required warfighting capability and affordability and represents the most versatile and least costly destroyer option available to us.

Mr. PAISLEY. With that, Mr. Chairman, I would like to turn to Adm. Steve Hostettler to wind up this session, to talk about the Tomahawk program.

Admiral HOSTETTLER. Mr. Chairman, I am well aware that you realize that Tomahawk is not a weapon system, but a mix of several variant weapon systems.

The flexibility of employment of those variant systems from our naval surface and subsurface platforms in surgical strikes, major engagements at sea, or against land forces will add an impressive and much needed offensive capability to our Navy.

All three of the Navy variants are scheduled for deployment on a variety of Navy platforms, attack submarines, cruisers, destroyers, and battleships and in several different modes—armored box launchers and vertical launch systems from surface ships, as well as from torpedo tubes and vertical launch capsules from our submarines.

This extremely versatile and densely packed family of weapons will provide our naval forces with a new dimension in naval warfare—a dimension that will allow virtually all Navy combatants, not just the carrier battle groups, to go on the offensive whenever necessary and from any corner of the globe. Over 150 Tomahawk-capable platforms are planned for by the mid-1990's.

With the deployment of Tomahawk antiship missiles on attack submarines and surface ships the standoff capability to attack enemy shipping, enemy task groups, is greatly increased out over 300 miles.

Tomahawk extends our task group antiship strike capability almost five times over the existing Harpoon antiship missile, currently the longest range standoff weapon deployed.

When the Tomahawk antiship variant is deployed we will be matching the range of the newest Soviet antiship cruise missiles already deployed, such as the SSN-12 and SSN-19.

Installed with Tomahawk, conventional land attack missiles, submarines and surface ships are provided with a strike capability not thought possible just a few years ago. This capability would be from deep water locations, striking targets well inland such as command centers, radar installations, and powerplants with a degree of accuracy unequaled by any weapon employed today by either side.

Deployed with the nuclear land attack variant the capability of these submarines and surface units to go on the offensive will be even greater. For example, our new design attack submarines can be installed with 12 nuclear Tomahawk cruise missiles with a range of more than 1,200 miles without removing a single torpedo.

This capability would most assuredly provide a viable strategic reserve force. In essence, the Tomahawk cruise missile is a, relatively speaking, low cost and very survivable weapon.

These missiles can be delivered from diversified survivable launch platforms, fly long range, terrain follow at extremely low altitude and effectively penetrate defenses and hit the target with a high degree of accuracy.

As you are also aware, Mr. Chairman, the transition of the Tomahawk program from engineering development into full-scale production has not been without its problems. As Secretary Paisley just mentioned, the Navy has taken the strong measures required to fully define those problems and to develop the comprehensive plans necessary to resolve them.

This has resulted in a significant program restructuring of the Tomahawk program in the near term in order to insure delivery of capable and quality systems to our operational forces.

The Navy intends to work these programs closely and we intend to provide to the fleet the reliable systems that it deserves with the significant capability inherent in that system.

COST OF TOMAHAWK CRUISE MISSILE

Mr. Chairman, I would like to comment, if I may, in addition, relative to your comment earlier on the cost of the Tomahawk.

Clearly, in transition of the Tomahawk from R&D to production those problems are seen to the taxpayers as growth in the program in terms of cost. It is also clear that we will pay, the Navy, that is, a good amount, a good share of those cost growths.

As Secretary Paisley mentioned, it wasn't just a contractor problem, it was a Navy-contractor problem. The program has not been budgeted properly to cover all aspects necessary for that transition. Contracts had been descoped in certain critical areas such as product assurance and we are going to have to buy that back at higher cost.

The result was that the schedule slipped. Missiles took longer to get off the production line than they should have and therefore cost more.

What are we doing about it? First, we are overhauling the entire quality assurance program. That is going to cost additional dollars.

Second, we are reducing and have reduced the number of missiles coming off those production lines to the bare minimum necessary to maintain our test and evaluation program and our very high priority IOC requirements.

We are holding that production line and have had that production line held to a maximum of four to six per month since October.

We have further reduced the total buy in the restructured program in the 1982–83 timeframe.

Senator COHEN. Is that another way of saying we are paying more for less?

Admiral HOSTETTLER. You are paying the same amount of dollars for fewer missiles because, quite frankly, to do otherwise does not appear to me to be prudent. We need better missiles. We need to fix the problems now while our production rates are low, so that when the production rates start to go up I can tell you, Mr. Chairman, that we have a reliable missile and the cost of those missiles is what it should be.

It is a near-term measure and I think it is necessary. We have reduced those numbers by some 63 in 1983 along. In 1983–84 there is a reduction from 175 of the ship launch version to 112. We reduced it to the point absolutely essential to meet our near-term requirements as well as giving the contractor the opportunity to train up to a production base.

Furthermore, in 1984 the plan was to produce 432 total ground-launched and ship-launched cruise missiles. Those numbers have also been reduced significantly to a total of 244, which then brings me to the next action that is ongoing which is entering into the solution.

It is called dual source. We are busily engaged along with everything else in bringing a second source aboard at this very time. It is my intention to put out an RFP for that competitive bid for certain 1984 rounds.

Senator COHEN. Tomahawk is currently sole source?

Admiral HOSTETTLER. Yes, sir, Tomahawk is sole source from a final assembly point of view. A great deal of what goes into that round is provided GFE to my final assembly contractor.

For instance, engines are provided to General Dynamics for assembly. Guidance sets are produced by McDonnell Douglas, assembled there, bought by the government there and then shipped to the final assembly plant as GFE.

About 43 percent of the total cost would go to the final assembly plant who does the entire air vehicle, and avionics. The rest is distributed, engine, guidance, booster, capsule, those types of things which are GFE.

There is a lot of leverage to dual source, sir. It would be my hope that we could sustain the minmum numbers necessary to get that second source aboard and we have in fact held those numbers very carefully to the minimum right now. At the same time provide such numbers to allow me to bring that second source aboard and obtain the leverage that I think the program needs.

Senator COHEN. How do you reconcile that with Mr. Paisley's statement that you are going to restructure so that the stockholders have a real stake in this? Going to dual source does not diminish the responsibility as opposed to having sole source.

Admiral HOSTETTLER. No, sir.

The statement that Secretary Paisley made concerned accountability, that is my prime engineering and integration accountability. Prior to recent months if there was a problem in the Tomahawk program you could not find anyone in the field, no contractor, or no laboratory, that would hold up his hand and say I am responsible for Tomahawk.

I think it is particularly important that in the engineering sense that we have that accountability in the field. In the case of the missile that accountability now rests with General Dynamics, where it should have been all along.

In the engineering sense we have provided for the missile accountability through the contractor which is the prime system engineering house.

I also have a prime system engineering house for the ship weapon system which also had no accountability. Accountability for the success of that total system.

My goal here is to want to achieve the synergism of the team efforts which we didn't have and to avoid the finger pointing as to who is responsible for what in the program outside of my own office.

Certainly one of my prime engineering houses could have a bearing on what is produced, I hope he would. Nevertheless, it is my intention to provide an environmental atmosphere where I can get competition on the production line. I think I can do that.

I really have two primes and I am going to monitor both of them and insure the integrity of both.

Senator COHEN. The report I saw recently indicated the Soviets have managed to come up with some of our technology. They now have the Tomahawkski.

Could you tell me whether there is any truth to that report?

Mr. PAISLEY. Maybe we can talk about that a little more in closed session? Could we?

Senator COHEN. I will be happy to talk about it in open or closed session.

Mr. PAISLEY. I think we ought to. We can tell you more about it. In fact, that brings us around to the point where we have covered the programs with you and we are ready to go into the closed part of the session for questions.

Senator COHEN. Before we do that, Senator Nunn, do you have a statement to make?

Senator NUNN. No.

Senator COHEN. We will declare the open session terminated and we will move into closed session. Those who are not authorized to remain will have to leave.

[Whereupon, at 11:05 a.m., the subcommittee proceeded in executive session.]

EXECUTIVE SESSION

Senator **Cohen**. Now that the room has been cleared and we are in executive session, you may proceed, Mr. Secretary.

Mr. **Paisley**. Mr. Chairman, let me cover the last points you were asking a question on because I do not want to forget it and not answer your question.

I would like, if I could, to set up an off-line session with you with the Director of Naval Intelligence and cover the item you asked me about. To be frank with you, I don't know how much I am free to talk about it and I would rather do it that way, but I will definitely do it.

Can we do it that way?

Senator **Cohen**. Any objection?

Senator **Nunn**. No objection.

Senator **Cohen**. That will be fine.

Mr. **Paisley**. We are ready for questions if that is the way you would like to handle it now.

LAMPS HELICOPTERS

Senator **Cohen**. I will begin by talking about the LAMPS Mark III and Mark I. We are buying the LAMPS I helicopter which is the SH-2F and I am told the procurement rate is slowing down from 18 in fiscal 1983 to 12 in 1984 to only 6 in 1985. The series of questions I have is what is the difference in capability of LAMPS I and LAMPS III and how many torpedoes does each of them carry?

Mr. **Cann**. First of all, LAMPS I is a relatively old technology. It has the ability to go out to about [deleted] and operate [deleted] because it has to stay within line of sight of the ship it is operating with because it does not have an onboard processing capability.

Its ability to prosecute submarines is derived from the fact it drops sonabuoys at a maximum range [deleted] and data links information back to the ship which results in processing which directs the aircraft to drop bombs.

It also carries one torpedo. Basically it has a very limited time on station. It has approximately an hour duration out there which is not very long. It typically takes in the order of 30 to 45 minutes to have one attack. Of course, it has only one torpedo. So if they miss, they have to come back in and reload and refuel and go back out.

LAMPS III has been designed to go out to 100 miles. It is designed to have [deleted] on station at 100 miles which is significant. Of course, the thing that is more important is that at ranges that I think are tactically useful, and normally between 30 miles and 60 miles, it has a significant capability at those ranges to have at least [deleted] and to stay out there for some period of time.

Also it carries two torpedoes which is a fundamental improvement.

The other major improvement is that the processing capability on the LAMPS III which is part of our standard ASW processing suite which is derived from the advanced signal process or gives us both an onboard helicopter and data link capability back to the ship which allows us to process our most advanced sonabuoys and allows us to process a number of them simultaneously whereas LAMPS I has a somewhat antiquated processing capability which is still useful, but limited in terms of capability.

I think another way to look at that whole process is to say that the LAMPS III basically has about nine times the coverage capability that LAMPS I does if you look at it on an area basis.

Senator COHEN. As I look at the numbers, you have the production rate of LAMPS III of 24 per year for 1983, in 1984 that drops down to 18. Then you have procurement of the LAMPS I dropping 18, 12, and back to 6 in 1985.

Could you not accelerate the production of LAMPS III in 1985 beyond that 24 level?

Could you close down the production line of LAMPS I which appears to be an uneconomical rate of production for at least fiscal 1985?

In other words, if we get into a question of trade-off and the Budget Committee comes up with some reductions in the amount of money—as you know, the Armed Services Committee has recommended full authorization of the President's program, but it does not look very promising that the Budget Committee will accept that recommendation.

Assume they start cutting back, whether it is 5 or 3 precent, we have to look for areas in which we have to take the loss. The question is: Is this one of those areas in your judgment where we would be forced to make a tradeoff?

Mr. CANN. LAMPS III, of course, has had an interesting history with respect to its production rate. At one point in time we made a commitment to buy it out, to improve the cost picture. Of course, the cost picture looks very attractive with a 4-year buy-out.

Last year that got broken through the appropriation and subsequent to that, once that happened, it began to become clear that the issue was no longer that rapid buy-out. So the thing did get stretched somewhat in the POM process last year.

There is no question that the Navy needs LAMPS helicopters. There is no question that LAMPS III is the future. LAMPS I, though, is a very necessary helicopter in terms of——

Mr. PAISLEY. Excuse me. There is a fundamental issue. That is a very clear question. LAMPS I is phasing down and LAMPS III is phasing up.

Is it possible we could increase the LAMPS III buy and cut out LAMPS I sooner? It is a fundamental and simple question. There are a lot of reasons why you might not want to.

Maybe Dutch can address that.

Admiral SCHOULTZ. You want me to make a choice?

Senator COHEN. I am trying to put you in my place.

Admiral SCHOULTZ. That is difficult obviously because the SH-2 is going to the Reserves and we are trying to support and build up the Reserves. A good number of the last part of the buy will probably go to the Reserves. We are trying to transfer ships to the Reserves with not full capability.

Mr. Cann has pointed out the requirement for the LAMPS III which we very badly need. My answer to your question would be to look somewhere else.

Senator COHEN. We will go down the list. We have been looking for all these places trying to calculate what is going to happen, what anyone on the Budget Committee is going to recommend.

We will be happy to compare notes if we can have a list. Several members of the staff have been searching their computers overtime over the weekend looking for possible areas. That is one that comes to mind.

Are we buying LAMPS III quickly enough to fill up the ships that are capable of carrying them at this point?

Admiral SCHOULTZ. Yes, sir. I think that is one of the reasons we were delayed because there was some comment that we were buying the airplanes faster than we had ships capable of putting them on. That is why the program stretched from 4 years to 9 years to 11 years.

There was resistance to buying aircraft that you didn't have ships ready to put them on. That is what stretched the program.

Senator COHEN. Maybe the easiest way for us to proceed would be for you to go over your classified areas of testimony in the seven areas I mentioned.

Mr. PAISLEY. We had not planned to talk in any detail on it. We thought we would probably get into some classified questions. I think Bob did say he wanted to talk in one area there. Let us do that.

SH-60F

Admiral MONROE. Mr. Chairman, in my testimony on the SH-60F, the carrier based dipping sonar helicopter, I left two areas for the closed session. Both had to do with changes in the threat or urgency of the need.

The first one has to do with the quieting program of the Soviet submarine force. For years we kept watching each new generation of Soviet submarines expecting them to be an order of magnitude quieter than their predecessors and this didn't happen.

Thus for about 20 years our fundamental ASW strategy has been based on passive sound, and the Soviets have accommodated us by building noisy submarines. They have now stopped that practice, and stopped it with a vengeance. Not only are the new classes much quieter than the former classes [deleted] but as an individual submarine goes into the yard and comes back out after an overhaul it is quieter after overhaul than it was before.

They are developing [deleted].

The trend lines are alarming as they go down. As the Soviet submarines become quieter, [deleted].

I don't want to overplay this and say we are suddenly going to drop dead, that is not the case. But we can expect more [deleted].

Finally, when these submarines get to that inner zone within a few miles of the center of the battle group—they are within minutes of their firing positions. We must react very quickly and be highly mobile over great distances.

All of these threat trends increase the importance of the dipping sonar helicopter, the SH-60F.

WEAPON LOADOUT OF SOVIET SUBMARINE FORCE

The second point I left for the closed session was the weapon loadout of the Soviet submarine force. If you identify all of the Soviet oceangoing submarines that represent a threat to our battle groups, and tote up the numbers of torpedoes and the numbers of missiles that each carries, and add up the totals for the Soviet submarine force, you find that [deleted] the Soviet submarine carries are torpedoes. Just a little over [deleted].

Now, what we hear most about is the spectacular growth in capability of antiship missiles, as you and I talked about earlier. Certainly the *Oscar* submarine with its 24 tubes does represent a potent missile threat. However, in the aggregate almost [deleted] carried by the Soviet submarine force going to sea to attack our forces and battle groups are torpedoes.

To fire these they have to press on home. So we know thay are going to try to be coming in.

Senator COHEN. What are the ranges of their torpedoes?

Admiral MONROE. Let me ask Mr. Cann to cover their existing torpedoes [deleted].

Mr. CANN. Typically a torpedo does have a great deal of range. They have [deleted]. With the ones that have straight line pattern runs you have to get in position, you have to get lined up much like you did in World War II.

Typically they want to close to very short ranges [deleted] to shoot them. [Deleted.]

In my judgment the more serious [deleted].

We are aware of the fact [deleted].

[Deleted.] I consider it a very serious threat. Obviously you want to prevent them from getting close enough to use it.

Admiral SCHOULTZ. When the submarine makes the attack he is operating close to the sonic or thermal layer. If he hears an active sonar, he may drop down below the layer or stay in the layer and move in.

The dipping sonar is the only system that we have that is active, that can go down below that layer. If the submarine is making an attack, riding the layer coming in, it makes him difficult to find. If he gets in close and he hears an active sonar he drops down below the layer to press his attack. The dipper will drop below the layer also, and that makes the sub skipper nervous.

We have learned this from the bleeps of the submarines we play with in exercises. The dipping sonar we plan for this helicopter has [deleted].

Senator NUNN. I notice in your prepared statement, Mr. Paisley, that you refer to maintaining our ASW advantage. I agree with that. My impression has been for several years that we do have strong ASW advantages.

If you took it right now today as to what we have now in the fleet, not talking about down the road, is it true we still do retain very strong antisubmarine warfare advantages over the Soviet Union?

Mr. PAISLEY. Let me say one thing. This build-up in the Soviet's capability to close the gap between our lead and where they are affects not only what Admiral Monroe was talking about, but is very germane to our new submarine design.

What I would like to do is to have Mr. Cann talk a little bit about the threat that has driven us to the new submarine design.

Senator NUNN. I don't want to interrupt Senator Cohen's line of questions.

Mr. PAISLEY. It really follows that.

Senator NUNN. If I could ask this question and then we can get back to that.

Do you have a war game that would be conducive to showing us in the committee, to give us present capabilities as to how they would stack down in any kind of naval battle, particularly the ASW part of it?

Mr. PAISLEY. I think this can be done. We may have to back you up and take you up to the War College where we do some war games, but it can be done.

Mr. CANN. Last fall we ran such a war game at the War College. I was fortunate enough to be what we call the blue NCA, everybody down to the 7th Fleet. I really had control the first time since I have been around.

We had set the game up so that ASW would be the predominant player. We factored in all the systems that we thought would be available in the 1995 timeframe. We ran that game.

I can get you a summary of the results of that game. I would like to quickly point out it was a setup exercise in some respects. I had a lot of control.

I was trying to make sure the efficacy of certain kinds of systems was demonstrated so that people would understand how they could have an impact in the future. It was an interesting game because it was in the Indian Ocean which everybody has agreed is a difficult place to do ASW. We are trying to look at the efficacy of our systems like SURTASS. I will get you that report.

[The information follows:]

FINAL REPORT, SEACON 83-1, WAR GAME, DECEMBER 31, 1982

COPY NO. 001—VOLUMES I AND II (ATTACHED)

[Final report is retained in committee copy of transcript. The report is classified secret.]

Senator NUNN. That would be interesting. I would like to have that.

Was that game geared to 1995 assumptions and if that were the case, do you have any games that are current that would get to the actualities of what is out there right now?

Mr. CANN. There are games being run all the time. We can get you a summary of those games.

Senator NUNN. The problem is timing and so forth. I just wonder if any of those are conducive to having a half-hour presentation here?

Mr. CANN. Absolutely. That can be done.

Senator NUNN. Time is our problem around here as you well know.

TESTING AGAINST TARGETS

Senator COHEN. Admiral Monroe, I asked you a question about targets, testing against targets. You indicated, No. 1, they are fairly expensive.

No. 2, you might not want to destroy it.

And, No. 3, you don't want it destroying you.

Within that context what are we doing on supersonic seaskimming missiles coming in, and how will the Aegis perform against that threat?

Admiral MONROE. Let me go one step broader than that first. From the viewpoint of the enemy who is firing the missile, if he puts that missile right down on the wave tops, 10 feet, 30 feet, it will not see much. If he fires from a distance out, it will not find the target.

So, the missile had to come in at a considerable altitude for search, and only progress lower down to low altitudes in the last few miles.

Let me give you an example of EXOCET first and then I will get to your supersonic missile. The reason I am covering EXOCET first is that it exists. [Deleted.]

EXOCET is representative of a class of subsonic seaskimming missiles, and as it approaches from its launch platform it is cruising at maybe 300 feet, high enough for our systems to see it at well beyond 10 miles range. At something like 7 miles range, and this is before the seeker turns on, starts a let-down, to about, say, 35 feet. It continues on in, at that altitude, turning its seeker on until it gets to maybe 3 miles; and it is at that 3-mile range that it lets down to maybe 10 feet.

Now, we were talking earlier about the criticisms that have appeared in various periodicals and reports that Aegis has not been tested against this specific data point or that specific data point. Aegis has been tested against targets at [deleted] and at [deleted] Aegis will be able to see an EXOCET when it is at its [deleted] cruise altitude and will intercept it.

It will be able to see it at the [deleted] altitude and intercept it. What we are not completely confident of is Aegis' capability [deleted].

At that altitude we have these other systems I identified, SLQ-32, Super RBOC Chaff [deleted] and principally the Close-in Weapons System, which is effective at those altitudes.

Senator COHEN. What percentage of our ships currently have those systems?

Admiral MONROE. For each class it differs. I will have to provide it for the record. But to give you a round number just for the Close-in Weapons System, we presently have 86 units at sea in 44 ships. We are putting 15 more in 10 ships right now—in the process of installation—and by the end of the decade we expect to have 520 individual units at sea in over 300 ships.

For example, the *Arleigh Burke* DDG-51 has two of these systems. I might make one last comment on this.

When Aegis was designed and when Aegis was being tested at sea there wasn't any low altitude missile down at [deleted]. "Low altitude" may have meant 1,000 feet when Aegis was designed;

maybe 300 feet when it was first in testing; and later low altitude meant 50 feet. [Deleted.]

It is just not possible to take a system like Aegis, which was designed for one range of threats and, redesign it at the last minute to make it accommodate a completely different threat. We find when we do this in our weapon systems it is generally ill-advised. The cost goes up, the IOC stretches out, and we are frequently unsuccessful in making it do things it wasn't designed for.

So, with the existence of these other systems to directly attack and defeat the seaskimming threat, an overwhelming attempt to focus Aegis solely on the seaskimmer is not really an advisable issue. Aegis does many other things so well, and it also handles the seaskimmer at its outer ranges and we have other systems to handle it at the inner ranges.

Senator COHEN. Could the close-in weapon systems stop the [deleted].

Admiral MONROE. I will have to provide the answer to that.

Mr. PAISLEY. We don't know the answer. We will get you the answer. Let me talk about that a little bit.

[The information follows:]

The Navy cannot give a definitive answer to this question. Intelligence predicts [deleted]. If this is an accurate prediction [deleted]. The improved version of Phalanx is designed to [deleted]. It will commence OPEVAL this year.

Mr. PAISLEY. It is a high rate fire system which uses depleted uranium ammunition. It has a high amount of penetration capability in the projectiles. If you hit the front end of the missile, the missile probably, if it is under control of its guidance system, will become unstable.

Some missiles put in the capability to just lock up in the last position. The inertia of the large missile coming in can sometimes ride on through. It is like a shell. We have knocked down gun-fired 5-inch shells with this system. It is possible to hit and knock them out, but it is a matter of what the system is designed to do. I would suspect that the new Soviet missile is going to be sophisticated enough to come in under flight control. If you hit the guidance system in it from the front end or any control capability, it will go unstable.

We will know for sure and we will give you an answer.

MISSILE DEFENSE SYSTEMS

Senator COHEN. What missile defense systems do the ships that don't have close-in weapon systems have?

Admiral MONROE. Excuse me?

Senator COHEN. What kind of missile defense system do you have on those ships that don't have close-in weapon systems?

Admiral MONROE. I would like to provide for the record, the exact inventory of ships and planned systems for them. It is an extensive accounting.

[The information follows:]

All classes of first-line surface ships have or are scheduled to receive a soft-kill ASMD capability (decoy and/or ESM). With the exception of CV/CVN, ships are presently equipped with the Super-Rapid-Blooming-Offboard-Chaff (SRBOC) decoy system. In fiscal year 1984 the TORCH IR decoy will be available; and in fiscal year 1986 both SRBOC and TORCH will be replaced [deleted]. All first-line ships have an

ESM capability; either the SLQ-32 or the WLR-1 (exceptions being CV/CVNs, which have an SLQ-17). The remaining WLR-1s are being phased out and replaced by SLQ-32s.

All surface ships are scheduled to receive the Phalanx CIWS except the aging DDG-37, DDG-2, and FFG-1 class. In addition all non-standard missile shooters (except FF-1052) have or will get a short-range ASMD missile system. Specifically the CV/CVN, LHA, LPH, LCC, AOE/AOR, and DD-963 have Basic Point Defense Missile Systems and NATO Seasparrow Missile system. These ships, plus others, are candidates for 5-inch Rolling Airframe missile (RAM). In addition CV/CVNs, AOE/AORs, and DD-963s will have the MK-23 Target Acquisition System (TAS) installed.

Admiral MONROE. In general they are the kind of systems that I described in my earlier testimony. The NATO Seasparrow today is in a number of ships that don't have close-in weapon systems. Super RBOC's and SLQ-32's are in ships that don't have the Close-in Weapon System. The 5-inch Rolling Airframe missile, will be installed in others. When that missile, when it is launched from the launcher, it is homing on RF energy from the radar seeker of the antiship missile. In flight it shifts over the infrared guidance, homing in on the heat of the missile. The classified comment with which I wished to amplify my open testimony [deleted].

The 5-inch Rolling Airframe missile is another system that is essentially easily installed in small ships as is the Vulcan-Phalanx, as are the others which can be mounted without a lot of modification and extensive overhaul work.

Senator COHEN. You indicated that the passive sonar systems [deleted] in the immediate vicinity of the carrier battle group.

Last year the House Appropriations Committee stripped off a number of these systems from the Aegis.

Do you agree with that decision?

Admiral MONROE. If I may, Mr. Chairman——

Mr. CANN. Stripped off which, sir?

Senator COHEN. Some of the passive sonar capability of the Aegis group.

Mr. CANN. First of all, you are going to need passive sensors to detect submarines even when they are very quiet in terms of when they are transiting. If you have a passive towed array, you deny him the opportunity to travel fast because there is not too much he can do [deleted].

Senator COHEN. When [deleted]. That is why you want to use the dipping sonar in LAMPS III. I assume that is the rationale that the House Appropriations Committee used to take it out last year.

Mr. CANN. I don't know what the rationale was for taking it out.

Senator COHEN. I reiterate to you what the testimony has been to date, namely that [deleted].

Mr. CANN. The passive system like TACTAS would be used to detect submarines out [deleted].

What Admiral Monroe was discussing is [deleted].

Senator COHEN. Do you think the funding ought to be restored?

Mr. CANN. I believe that all of our combatants should have the best ASW capability that they can.

DDG-51

Senator COHEN. Admiral Nyquist, there is an appearance, at least to a number on the Hill, that support on the part of either the Navy or Pentagon for the DDG-51 is not terribly strong and that there is a fear I have heard expressed by some contractors that the change in the ship design actually jeopardizes the starting date of the ship. There is a general appearance that has been generated about some confusion as to exactly where we are going.

I would like a more detailed explanation of what is the status of the DDG-51 at this point in terms of design, construction, IOC and all the details, including, for example, whether or not you really need the 51, or could you perhaps get by with the existing system.

In other words, the CG-47 or the 963.

Admiral NYQUIST. Yes, sir. Mr. Chairman, the DDG-51 over the past few months has probably gotten more scrutiny from the Navy chain of command from the Secretary on down than probably any ship, certainly in recent memory.

There is an absolute firm support for that ship because we need to replace those guided missile destroyers that will be reaching and surpassing 30 years of age in the late eighties. The DDG-51 has been holding constant in combat capability, that is the number one requirement and unchanged.

As we have proceeded through the design of that ship through preliminary design we realize at the same time that the ship has to be affordable in the numbers that we want to produce. Therefore, in answer to your question, is there confusion in the design? I would say no, sir, there is not.

We have decided to do that design in-house Navy to control two fundamental aspects of the program. One is cost and one is weight.

We believe that using the in-house capability that the Navy has, which includes the architectural firms that we have historically used plus our own Naval Sea Systems Command architect plus our naval shipyard architects, that we can produce an in-house design that will then be able to be competed to industry and give us a ship that has the proper emphasis on affordability.

Again, I would restate that combat capability has been held constant and supreme in the design of the ship.

Senator COHEN. Why do you need the advanced procurement funds for fiscal year 1984?

Admiral NYQUIST. We need those advanced procurement funds, Mr. Chairman. For fiscal year 1984 there is $99.5 million budgeted. We need $20.5 million for the initial detail design. That is the design that we will start after we complete the current in-house effort. We need $58 million to procure in advance, Aegis combat system components.

We need $21 million for the new computer to which the DDG-51 is now committed, UYK-43 which give us a tremendous increase in capability over the older UYK-7. That requires us to have that amount of money, just under $100 million, for those advanced procurements.

In R&D we have a request for about $111 million. About $42 million of that is for combat system engineering. About $15 million is for the SPY-1D; $11 million is for ASW systems engineering; $17 million is for command and control requirements. There is about $26 million in other areas.

Both the advanced procurement and R&D are very closely tied. For example, we need to get our hands on the UYK-43 computer as a piece of hardware in order to get that into the R&D testing arena to build the software, to work out the integration of that computer as a basis for the rest of the combat system.

So, if we do not get either one of those chunks of money, we see a delay of a year in getting that ship to the fleet.

Senator COHEN. What is the benefit of this ship as compared to either upgrading the DD-963 or downgrading the CG-47? I guess that is the choice.

Admiral NYQUIST. Yes, sir.

Senator COHEN. All I want you to do is make a case for me to take to the full committee.

Admiral NYQUIST. Yes, sir. The *Arleigh Burke* DDG-51 is a destroyer. It has used as its standard the CG-47. I hestitate to call the DDG-51 a downgraded CG-47, but it is a fully capable destroyer that does not have all the capability that the CG-47 does. It costs 30 percent less than the CG-47 to build, therefore we can get that destroyer to the fleet in greater numbers which is the problem we have to replace the aging guided missile destroyers that are just running out of gas.

To the Navy the DDG-51 represents an outstanding combat-capable ship that is going to be a full-fledged member of the battle group and also be able to conduct those independent and attack missions from the battle group that require a ship that can go into harm's way and be capable in all three areas of warfare, antisubmarine, antiair, and antisurface warfare.

We believe the DDG-51 is a credible destroyer in its own right and complements and supplements the battle group which will be composed of CG-47's and DD-963's.

In fact, it uses the basic propulsion plant which grew from the DD-963 into the CG-47. The cost to upgrade a DD-963 into the DDG-51 capability I believe would be prohibitive compared to designing the ship.

All of its capability in combat and survivability which we will need in the coming years we believe is best done by that new design ship.

Mr. PAISLEY. Basically, Mr. Chairman, let me make one comment on it without taking too long. In trying to figure out if there is another way to meet the requirement, namely taking an existing ship and upgrading it, we spent a lot of time looking at it carefully. It is not lightly that we moved into this solution because, to tell you the truth, I tried to take one view and let George Sawyer take the other and see if we could get an argument going that would bring a lot of data out.

Let me have one of my people who worked on this make a comment in regard to the selection, Dick Metrey.

Mr. METREY. One of the points for consideration that is important is the hardness of this destroyer. The DDG-51 is the first destroyer designed to meet the [deleted] hardness criterion that we are charged with doing by the Congress for the modern nuclear environment that these ships may have to operate in.

Both the DD-963 and the CG-47 are designed to [deleted] hardness which was the criterion that prevailed at the time these designs came about.

One of the big factors of going to a new hull design is the fact that we must now have a [deleted] ship. I think Admiral Nyquist covered the fact that you have essentially the same combat capability, perhaps not in as much depth in the DDG-51 as you have in the CG-47, for example, what we are talking about in the DDG-51 is fewer missiles because we have slightly smaller magazines. Rather than having 122 missiles like we would have on the vertical launch version of the cruiser, we have 90 on the destroyer. Rather than having two 5-inch guns, we have one. We have a slightly less robust fire control in the missile area.

The cruiser has four illuminators, the destroyer has three. We don't give up capability in the DDG-51. It has an Aegis system which is the most modern AAW system we have. It is an Aegis system, however structured to this destroyer hull.

Regarding the DD-963 and upgrading it, if we were to put the Aegis on that hull, you would essentially have the CG-47 class cruiser. The CG-47 is the basic *Spruance* hull which was upgraded to take the Aegis weapon system.

Senator COHEN. Thank you very much.

I was looking over a report which I have not fully read. It says the Brookings Institute has come up with some recommendations as to how to save some money. I notice it is not specified in the paper, but they would cancel construction of 32 planned Navy ships including 3 aircraft carriers, 9 cruisers, 11 nuclear attack submarines, 9 guided missile destroyers and renovation of 2 battleships.

I wondered whether or not they had the DDG-51 in mind and others as well?

Mr. PAISLEY. Mr. Chairman, there is one thing I want to remind you. I don't want to get off in my answers and not answer your question.

NEW SUBMARINE DESIGN

One part of the session we wanted to cover in the classified area was our new submarine design in terms of the threat.

Senator COHEN. I was going to get to that.

Mr. PAISLEY. Would you like to do it now?

Senator COHEN. Yes.

Mr. CANN. Mr. Chairman, one reason why we need a new submarine is because the Soviet submarines are clearly getting quieter. What everybody has a hard time understanding is that [deleted].

[Deleted.]

[Deleted.] Not that we didn't want to, we didn't know.

[Deleted.]

One way is by improving your quietness and also improving your sensor systems. We have a two-part program. One part of it is to improve the SSN-688's that are being built in the future starting with the SSN-751 ship which is to put the sensor system in until we get the full capability in fiscal year 1989. That also becomes the transition system to go in a new submarine.

The new submarine design that we have been talking about, the primary thrust of that in addition to getting more fire power and so forth is to make it quieter. We would like to improve the SSN-688 class [deleted].

It is a very important initiative on the part of the submarine force. To not do it would mean that while the SSN-688's and SSN-637's are very capable, [deleted].

[Deleted.]

Senator COHEN. [Deleted] Is it the Secretary of the Navy's proposal to take the battle to the back yard of the Soviets?

You may recall he issued a rather controversial statement about the role and mission of the aircraft carriers.

Mr. PAISLEY. Ask me that again.

Senator COHEN. Is this consistent with the policy articulated by Secretary Lehman that he would expect to move into the back yard of the Soviet Union and take offensive posture?

Mr. CANN. I understand the question. The thesis behind our ASW capability has not really changed in the last 10 or 12 years. One of the things we said we were going to do with our attack submarines was to move them up into [deleted] submarine barriers to prevent them from deploying submarines in the areas we can really put a choke point on [deleted].

Mr. PAISLEY. See if I can answer the question slightly differently. I think the philosophy of keeping ourselves to [deleted] if that is a good number, apart in both sensors and quietness, [deleted]. If you don't, you get into trouble.

That is the question I believe you are asking. The answer is yes, it is very consistent with that.

SH-60F

Senator COHEN. Let me come back to the SH-60F, Admiral Monroe.

How does it compare in capability with the existing SH-3H? What is the difference? I want to know what the difference in capability is and compare it with the cost of restarting that old production line.

Admiral MONROE. The SH-60F is a much more capable helicopter and in terms of reliability, in terms of maintenance I will have to give you the exact numbers for the record but they are spectacularly different.

In terms of the ASW effectiveness—in addition to the effectiveness it gains by being more available and being faster in arriving at a contact area—this depends to a degree on the dipping sonar. The AQS-13F, which will be in the SH-60F is a significant improvement on the existing sonar.

Mr. CANN. I think the question is what is the difference between the two helicopters.

Senator COHEN. I would like to have a detailed breakdown on the difference between the two and cost in terms of what it would cost to start up the order line.

Mr. PAISLEY. There are two things, one is capability of the helicopter and also capability of the sonar.

Mr. CANN. The sonar could be on either one. The issue is the two helicopters. We will get you that.

Senator COHEN. Get me the acquisition cost and life cycle cost as well.

Mr. CANN. Yes, sir.

[The information follows:]

SH-60F CV HELO

The comparative capabilities of the SH-3H and the SH-60F are listed below:

	SH-3H	SH-160F
Maintainability (maintenance man-hours per flight-hour)	28.3	15.
Reliability (mean time between failures)	.7	1.8 hrs.
A_I (inherent availability)	.83	0.90.
Speed: Dash	115	130 kts.
Max range cruise	100	125 kts.
Fuel usage: AWS hover	1,700 [1]	1,390 lbs/hr.
Max range cruise	1,087	906 lbs/hr.
Payload (above ASW mission load)	0	2,500 lbs.
Torpedoes	2	2 [2].
Hours on station: ASW mission	[Deleted]	[Deleted.]
In hover	[Deleted]	Deleted.]
Engine (Shaft horsepower)	1,358	1,690.
Takeoff gross weight (ASW)	21,000	20,500 lbs.
Ferry range	575	701nm [6].
Spot factor (A-7=1.0)	.83	0.63.
Sonar depth capability, Sonar detection threshold; average area covered (1 dip)	[Deleted]	[Deleted.]

[1] The SH-3 cannot hover until its weight is below 18,800 lbs. Fuel usage values are for a standard hot day (Sea Level, 90°, at 18,800 lbs).

[2] The SH-60F can carry 3 ALWTs or 2 ALWTs and a fuel tank.

[3] Carrying 2 ALWTs and 1 external fuel tank.

[4] The SH-3H cannot hover (unless fuel is dumped) until fuel burns down to a gross weight of 18,800 pounds (about 1½ hours after takeoff). Of the remaining 1.8 hours on station time, hover time is restricted to 0.9 hours to allow for transit time and recovery on CV, plus fuel minimum reserve. The SH-60F will be able to hover immediately after take off.

[5] The ASW CV Helo requirement is to hover for 50 percent of the mission.

[6] With 2 external fuel tanks.

Sikorsky has been asked to give the Navy a quotation on the cost to start up the SH-3 line. They were unable to give a budget class estimate because some of the parts suppliers are now out of business or no longer build the parts. The effort to obtain a budget class estimate would require a $40-50k study. Sikorsky's rough estimate for reopening the line is about $100 million, and the acquisition cost of a new production SH-3H is on the same order as the SH-60 airframe cost. Reopening the line would reintroduce a 25-year-old technology helicopter into the fleet to operate until the year 2010.

In order to reopen the line, with the vast differences that would required to produce the various components in a "new" SH-3H, engineering design and component testing will be required. This effort would have to be costed, but combined with the rough estimate from Sikorsky to open the line the cost would be higher than converting the SH-60B into a SH-60F and gaining the economy of using the same production line. This is especially true since the Navy already owns enough tooling to produce sixty SH-60s a year.

The comparison in performance between the SH-3H and SH-60F, in pure abstract numbers is contained in the first part of this insert. However, in a true operational sense the SH-60F will provide first of all, a 20-year jump in reliability and maintainability, giving the operational forces the capability of more helicopters airborne. Second, the sonar performance will allow the SH-60F to search an area of [deleted] square nautical miles (an average area search for one dip) in [deleted] minutes while it would take the current SH-3H about 15-20 minutes to do the same area (this includes the time to make three dips and the transit time between dips). In the melee of the inner zone, where minutes may make the difference on who attacks whom, this higher availability of airborne units and rapid search time could make the difference that wins the day for us. When this improved time to search is combined [deleted] the MK-46 torpedo, the SH-60F will be the fastest, most accurate attack system in the inner zone.

We do not have an accurate life-cycle cost comparison for the SH-60F and the SH-3H. Without question, however, the life-cycle costs of the SH-3H would be greater, because of the equal-or-greater RDT&E and procurement costs discussed above, and the much greater operating and support costs caused by greater fuel usage, lesser reliability, far greater manning-levels required for maintenance, etc.

LAMPS I AND III

Senator **Cohen**. A followup question of where we were going before, LAMPS I and LAMPS III.

What would be the cost involved in terms of closing out the LAMPS I early and the additional cost of advancing LAMPS III while maintaining the 24 number for 1985 and beyond?

Mr. **Paisley**. Compare capability, what you lose and what you gain by holding it at 24?

Senator **Cohen**. Yes.

Mr. **Paisley**. Yes.

Senator **Cohen**. In other words, I am going to need something for the record to defend your request before the cuts start to come.

[The information follows:]

LAMPS PROCUREMENT

Closing out LAMPS I production with the fiscal year 1984 budget request and zeroing the planned procurement of 6 LAMPS I in fiscal year 1985, would save −$87.9 million (then year dollars) in fiscal year 1985. An additional 6 LAMPS III for a total of 24 in fiscal year, 1985 would require +$140.8 million (then year dollars) in fiscal year 1985.

Terminating LAMPS I production will not provide sufficient force level to meet LAMPS I Active and Reserve requirements for the remaining service life of LAMPS I capable ships. To bring requirements into balance, the number of aircraft planned for transfer to the Reserves may have to be reduced. A production rate of 24 LAMPS III per year is sufficient to maintain a good business base while providing a balance with ship standup requirements. Both operational need and good business strategy strongly support maintaining a 24 LAMPS III per year acquisition plan.

MEDIUM DEPTH MINES

Mr. **Cann**. You wanted to talk about medium depth mines?

Senator **Cohen**. Yes, specifically the Captor mine.

Do you have a requirement for a medium depth mine?

Mr. **Cann**. Let me start off by saying a bit about mine warfare.

First of all, mine warfare is obviously a very important aspect of naval operations. We have three mine programs at the present time.

One Quickstrike which is an air delivered mine which is basically a bomb which you put a fuze in and it comes in various sizes, a very successful and very inexpensive program, it requires flying low with A-6's or A-7's and dropping mines in harbors. [Deleted] depending on the size of the bomb.

The other mine that is getting ready to go into the inventory is something called SLMM, submarine-launched mobile mine. They are [Deleted]. They are fired by the submarine and [deleted] which is a very useful kind of capability.

They are delivered by submarines so they have a better chance of getting them in without loss.

Finally, we have the Captor mine system which we developed over a very long period of time which is now a very capable antisubmarine warfare mine which was originally designed [deleted] you want to deny them.

Earlier we had a program first called PRAM and then called medium depth mine which was supposed to be a [deleted].

The program went through a couple of starts and we finally 2 years ago decided to not continue the development of that mine. There are two reasons.

One is that it was clear to us that the WPN cost was going to be $1 billion. Total development and production cost was then believed to be another $.5 billion or in that order.

Second of all, one of the issues that never really got addressed very clearly by us was the whole question of [deleted]. Some of the earlier mine planning says [deleted].

An evaluation of the effort was that our predominant problem was to [deleted]. We had an expensive effort going on to make sure that the Captor system does what we want it to do. The decision was made to continue Captor and we are currently looking at how to make Captor [deleted].

The result is at the present time there are no plans to develop another mine system which we think would be a very expensive mine as additional mine capability. We think a number of improvements could be made incrementally to mines to maintain this kind of capability.

Senator COHEN. How much money was spent on the medium level depth mine?

Mr. CANN. I don't remember. I will get you that number. It was not a significant amount of money.

[The information follows:]

MEDIUM DEPTH MINE

A total of $3,200,000 was spent on the development of the medium depth mine in the period fiscal year 1981 through fiscal year 1982.

Senator COHEN. Has that money been reprogramed into the Captor?

Mr. CANN. The money that was appropriated last year, we still have that money. It has not been spent. The $5.5 million we still have. We would like to spend it on improvements to Captor. So far we have been told not to do that.

MARINE CORPS ASSAULT VEHICLES

Senator COHEN. General Russell, I have a couple of questions.

For the Marine Corps assault vehicle R&D program $61.2 million has been requested. This will fund three programs: The mobile protected gun system, landing vehicle, tracked [LVT] and light-armored vehicle.

Can you give us a status report on each of those three systems?

General RUSSELL. Yes, sir, I will start out with the LVTX which is the follow-on assault-amphibian vehicle for the 1990's, projected IOC of 1994.

The vehicle is in the conceptual design phase at the current time we have conceptual design contracts with three contractors: FMC, Bell Aerospace, and GD, the former Chrysler which has been bought out by General Dynamics.

Those contracts will result in the next month or two in final reports from those contractors following which time we will enter a DSARC level one type decision and choose two of the contractors to carry their designs into the demonstration and validation phase in fiscal year 1984.

Our funding request for fiscal year 1984 is to begin the D and V phase of the LVTX design.

Our LAV program is another major area in that particular program element. We are looking at the other mission role vehicles to complete the LAV-25 production contract which was signed last year.

We are looking at two R&D vehicles of the various designs, to include a mortar carrier, a logistics vehicle, a command and control vehicle, an antitank vehicle, and a maintenance and recovery vehicle. That contract was signed last September and the R&D vehicles should begin delivery in May.

They will undergo complete testing by the Marine Corps out at Twenty-Nine Palms, Calif., and various other test sites. At the completion of the testing the Marine Corps will make a production decision on each vehicle and then execute the options that exist in the current contract with General Motors of Canada for that particular mission role vehicle.

Our research and development funding that is in the request for LAV is primarily to finance these efforts to get us started on the initial designs for the two remaining mission role vehicles that are not included in the current contract. These are an assault gun variant of the LAV, conceptually an LAV chassis with a 75-millimeter automatic cannon mounted on it, and an air defense mission role vehicle of the LAV family which would mount either a gun, or a missile, or a combination of the two on an LAV chassis for air defense.

MOBILE PROTECTED GUN SYSTEM

The last program that we have in the program element that you mentioned, Mr. Chairman, was the mobile protected gun system. This is a joint Army-Marine Corps system. It is in the premilestone one phase with the Army. We are trying to reach agreement with the Army on a joint statement of the requirement.

The funding that is in the request this year is primarily for development of the 75-millimeter automatic cannon which will be used in either the MPGS and/or the LAV program I mentioned.

Senator COHEN. You may recall the LAV program has been a problem in terms of Marine Corps aspirations and the Army's particular design. You have been working on a joint basis on the LAV for the past several years now.

What is your assessment of how that is going?

General RUSSELL. Our assessment is that the Army is solidly behind the program. We have a solid joint program to buy out LAV-25 which will greatly enhance both the Army and Marine Corps direct fire support capability and our ability to deploy that fire support to combat areas.

Senator COHEN. You are satisfied it is now an institutional commitment as opposed to leadership commitment in the Army?

General RUSSELL. I think there is leadership commitment and institutional commitment in the Army. Whether that has been conveyed to the other side of the Congress, I am not sure.

LIGHTWEIGHT ROTARY ENGINE

Senator **Cohen**. Last year, there was a reduction in the R&D money for a lightweight stratified charged rotary engine. Apparently, this year you don't have any funds requested at all.

Have you dropped it?

General **Russell**. We have not dropped it, but we have not requested funds for this year. As you know, the Senate Armed Services Committee was the committee that originally took a cut at that program. We have looked at it in great detail in the last year.

Our previous position on the stratified charge rotary combustion engine was that it was a potential power source for our assault amphibian vehicle fleet. After having suffered the problem of the congressional cut last year we have regrouped.

We are working with the contractor and other contractors on the LVTX program and if we come back in for another request for that engine, it will be a requirement and not a potential engine, it will be an engine that we require instead of just one that it would be nice to have.

Senator **Cohen**. On the Mark 48 ADCAP torpedo, there was an independent cost analysis that was to be conducted last year.

Mr. **Paisley**. Yes; we did do that.

Senator **Cohen**. How successful have you been at keeping it within that independent cost analysis?

Mr. **Cann**. Right now my information is that we are on schedule and on the cost. Right now we are doing just fine.

Senator **Cohen**. Do you foresee any kind of technical problems in keeping in line with that independent analysis?

Mr. **Cann**. No; we did several things. Not only did we do a cost analysis; we brought in probably one of the best people in the fleet we could find and converted him into a program manager, Commodore Reynolds. He has done an excellent job. I must say we took one of the vice presidents of the contractor in this case and made him an honorary and full-time program manager.

They are really doing a fine job. Right now ADCAP is in good shape.

Senator **Cohen**. Will you furnish us with a copy of that cost analysis—I think it has been cleared with the Secretary—for the record?

Mr. **Paisley**. Yes; absolutely we will do that.

[The information follows:]

The attached letter contains the MK-48 ADCAP cost analysis.

Department of the Navy,
Office of the Secretary,
Washington, D.C., March 25, 1982.

Hon. John G. Tower,
Chairman, Committee on Armed Services, U.S. Senate, Washington, D.C.

Dear Mr. Chairman: The Conference Report on the fiscal year 1982 Defense Appropriations Bill requires the Navy to provide the results of a "Should Cost" study on the MK-48 Advanced Capability Torpedo (ADCAP) program. The results of a detailed cost estimate of the ADCAP Research and Development program are submitted in response to that request. Should you desire further information, I will be happy to provide briefings for you or members of your staff.

The development schedule, procurement schedule, and costs of the restructured MK-48 ADCAP program differ from those previously presented to Congress. The restructured development schedule removes some concurrency between development phases, and the procurement schedule has been changed to reduce concurrency between development and production phases. The program is currently in the advanced development phase. A contract for full-scale engineering development will be awarded later this year. This contract will provide for a phased release of subsystems and components to full-scale engineering development based on successes in the advanced development test program. Technical evaluation of engineering development models will lead to low-rate production in mid-fiscal year 1985, and the decision to begin full production will be made based on a major milestone review at the beginning of fiscal year 1987.

The fiscal year 1982 and 1983 ADCAP program funding requirements have been satisfied in the fiscal year 1982 Defense Appropriations Act and in the fiscal year 1983 Presidential budget submission. The fiscal year 1984 and outyear RDT&E requirements are shown below. This cost-to-complete estimate for development has been derived from a detailed work breakdown structure and has been independently validated.

[In millions of dollars]

	Fiscal year—							Total
	1981 and prior	1982	1983	1984	1985	1986	1987 and subsequent	
FSED	6.8	62.5	166.3	186.3	142.3	69.5	17.5	651.2
ADM	154.5	91.9	20.5					266.9
Total	161.3	154.4	186.8	186.3	142.3	69.5	7.5	918.1

As reflected in the House Appropriations Committee Report on the FY 1982 Defense Appropriations Bill, the program funding requirements do exceed earlier estimates. Accordingly, the required funds have now been programmed in the Navy's five-year plan.

I believe, with reasonable certainty, that the restructured program cost and schedule are achievable and that procurement of ADCAP will be affordable. This judgment is based on my review of actions taken to get the program under control and assure proper management. The program has been restructured to reduce the risk in meeting cost, schedule and technical performance criteria. More stringent management control measures have been placed in effect. A stronger management team is in place in the Naval Sea Systems Command Project Office. The major contractors have assigned more qualified and experience management personnel with full cooperation of the highest corporate levels. The program manager is developing contracting strategies which will emphasize cost reduction measures. This will help ensure an affordable program.

The MK-48 ADCAP modification is clearly needed to upgrade Fleet capability against current and future threats. I will continue to direct the highest level of attention to this import program through periodic formal reviews within the-Secretariat.

I am also providing this information to the Chairmen of the House of Representatives and Senate Subcommittees on Defense, Committees on Appropriations and the Chairman of the House of Representatives Committee on Armed Services.

Sincerely,

JOHN LEHMAN,
Secretary of the Navy.

AEGIS TESTING

Senator COHEN. Just to clarify, when you furnish information for the record on Aegis testing, I would like to know what testing has been done, what remains to be done, what efficiencies have been noted and when you intend to focus on that seaskimming supersonic?

Mr. PAISLEY. We will do that.

Senator COHEN. If you could furnish that, it would be helpful.

[The information follows:]

AEGIS TESTING

The Aegis combat system has been at sea onboard USS *Norton Sound* (the Navy's test ship) for eight years. During this time the system has had over 50,000 hours of operation. There have been 139 live firings from *Norton Sound*, including 65 missiles and 74 other test vehicles. These 65 missiles have engaged targets which replicate known threats. Flight profiles have included low and high altitude, subsonic and supersonic speeds, and various types of maneuvers. There have been a number of exercises in which multiple targets were engaged simultaneously. In addition to the at-sea testing onboard *Norton Sound* and USS *Ticonderoga* (CG 47), the Aegis combat system has been installed at a land-based test site (LBTS) for 7 years and has over 33,000 hours of operating time. More than 500 targets are detected and tracked daily at the LBTS. Over 780 hours of testing have been conducted at this location against manned Navy aircraft representing threats at various altitudes and speeds. During 540 hours of these tests, the aircraft carried powerful, specially built electronic jammers to challenge the Aegis system.

Fourteen major operational exercises have been conducted (ashore and at sea) under postulated battle conditions. Some 2,000 tactical scenarios have been employed. To date the Aegis has met or exceeded all specifications.

At the time of this writing, testing is continuing onboard USS *Norton Sound* and USS *Ticonderoga*. Prior to 20 May 1983, USS *Ticonderoga* will have had 24 live firings of Standard missiles. The Aegis system is designed to defeat a broad spectrum of threats, including both high and low-altitude attackers. Many low-altitudes exercises have been run against Aegis, and its capability against such targets verified. While the Aegis system has not been tested explicitly against a sea-skimming missile, the sea-skimmer parameters are contained within the family of parameters which have been tested. Drones which accurately simulate low-altitude, high-speed threats will be available in fiscal year 1984.

Senator COHEN. I have more questions which I won't take time to ask now. I do have one from Senator Quayle.

ELIMINATING ADDED COSTS

Senator Quayle asks:

"One of the defense contractors who does business with the Navy in producing sonabuoys has estimated that the administrative overhead needed to administer contracts with the Department of Defense adds from 10 to 15 percent to the cost of the contract.

"One of the major contributors to this added cost is the 'C-Spec' requirement which is viewed as a requirement to create information which is not useful to the Department of Defense agencies involved and which is not needed from a corporate management point of view.

"Could you comment on why you continue to include the 'C-Spec' requirement in Navy contracts and what can be done to eliminate this unnecessary requirement with its added cost?"

Mr. PAISLEY. I am very sympathetic with this fellow because I went through that as a contractor. It has taken me a while to do something that I am going to do this summer.

I have initiated the activity. I have brought together through the NRAC committee, which is the Navy's Research Advisory Council, a handful of both people with a background in the military area of specification and contractors with experience on what should be done differently.

They are due to report out this summer, probably by August, to give me a report on what we should do to take some of the load of the Government off the contractors. Admiral Monroe works on that committee.

What we are going to attempt to do is address that specific question. We are going to address that specific question in that activity.

By the way, that is a particular sticky problem but there are a lot of them like that.

Senator COHEN. You are going to create a panel?

Mr. PAISLEY. No. The Navy's Research Advisory Committee takes on a series of studies each year. I assigned them three to be accomplished during the summer session.

One of the tasks that I have given them——

Senator COHEN. Who sits on that? Are they civilians?

Mr. PAISLEY. Civilians, right.

Senator COHEN. Would you put the contractor on?

Mr. PAISLEY. This contractor, would he like to be on the acquisition panel? Absolutely without a problem. In fact, Bob will take care of that because he is on it. He is the military secretary on it. We normally don't put admirals on that, but he decided he really wants to get involved. We will do that, absolutely.

Senator COHEN. General Russell, your prepared statement will be inserted in the hearing record. Also, I have additional questions which I will submit for the record. I hope you can respond as soon as possible. Thank you for your patience and testimony.

[The prepared statement by General Russell follows:]

PREPARED STATEMENT OF BRIG. GEN. EUGENE B. RUSSELL, U.S. MARINE CORPS, DEPUTY CHIEF OF STAFF FOR RESEARCH, DEVELOPMENT AND STUDIES

Mr. Chairman, distinguished members of the committee: I am honored to have the opportunity to appear before you for the first time in my current assignment as Deputy Chief of Staff for Research, Development and Studies and present the Marine Corps fiscal year 1984 R&D program. Before discussing our plans for the future, I would like to take a moment to review the past year. During 1982 our nation and especially you, our leaders, were confronted with significant challenges, many of which continue. Yet through these difficult challenges you and the entire Congress provided tireless support to the Marine Corps and for that I thank you on behalf of over 238,000 active and reserve Marines.

As we approach the mid-1980's, it is imperative that we examine the lessons we have learned in the first half of this decade in order to be better prepared for what may lie ahead. Numerous global challenges occurred during the first three years of the 80's, which captured the attention of the entire world. The incidents surrounding the hostage crisis in Iran provided many lessons to be learned. The Falkland Islands action continues to provide significant lessons that are being carefully examined within the Marine Corps and the Navy. The battles in Lebanon and incidents within the Middle East region today are teaching us more and more about the complexities of fighting in the desert and in urban terrain. As we sort through these lessons, one common denominator stands out clearly—Global Response Through Seapower. This is one lesson that is not new or unique to the 1980's. Throughout our history the Navy/Marine Corps team has provided global response through its Amphibious Task Forces representing our Nation's most rsponsive and effective forcible entry capability. These Amphibious Task Forces have served not only in the role of offensive power projection, but also in diplomacy and as a show of force in deterring aggression by hostile nations. The flexibility of our Naval Amphibious Forces can be applied in control of the sea lanes of communication, the seizure of strategic choke points, as well as the defense of advanced naval bases. This flexibility is basic to the Marine Air-Ground Task Force, which can be tailored to provide the most responsive and effective force necessary to meet the specific mission.

Marine Air-Ground Task Forces (MAGTF's) provide a flexible, combined-arms capability that is logistically substainable from the sea and capable of being fully integrated with our other Services and our allies. Such capabilities point to the obvious—the Marine Corps' basic mission is amphibious warfare. In order for us to continue our state of readiness in accomplishing our mission, we constantly review the mission area in amphibious warfare, the most complex of all military operations. We will continue to carefully evaluate the many lessons we have learned over the years both from within the U.S. Services as well as from our allies. We will also actively pursue the technological advancements that enhance our fighting capabilities. The programs we are most interested in are those that provide the means of getting Marines to the conflict area and getting them ashore quickly, that assist in their ability to maneuver inland, that provide coordinated, accurate, and timely fire support including air, artillery, and naval gunfire, and finally those that provide logistic sustainability throuthout the operation. To obtain each of these equally important ingredients we must make careful investments of our research and development funds.

The Marine Corps fully realizes the current economic constraints that have created extreme difficulty for the leaders of our nation. We are very much aware of our responsibilities to ensure that funds appropriated to the Marine Corps are spent only on those items deemed essential to the accomplishment of our mission. In reviewing our record over the past few years, I am proud to say that our R&D accomplishments have given us a reputation for frugality. In keeping with that tradition of frugality, the Marine Corps Research, Development, Test, and Evaluation budget request for fiscal year 1984 is $254.4 Million, a 3.5 percent increase over last year's request. This is 3.3 percent of the total Department of the Navy RDT&E budget and 1 percent of the total DOD RDT&E budget. I must point out that this Marine Corps RDT&E budget does not include funds for the development of Aircraft for Marine aviation, such as the F/A-18, AV8B, CH53E, and the new JVX, since these programs are funded within the totality of Naval aviation in the Department of the Navy.

The Marine Corps R&D strategy emphasizes the acquisition of operational capabilities that minimize high risk exploration, extensive development cycles, and unilateral acquisition. Our strategy is aimed toward the exploitation of low-risk, state-of-the-art technology. Existing weapon systems and equipment are carefully examined to determine the cost-effectiveness of service life extension and product improvement programs which may prove to be less expensive and more responsive to our needs. We participate with the other Services in developing and procuring weapons and equipment that meet our unique Marine Corps operational requirements. In addition, we join in the development effort of other Services to influence the design characteristics and performance capabilities of equipment that meet common requirements. Only after we have carefully considered all of these aspects do we undertake a unilateral effort. Normally, our unilateral programs are in response to a requirement that is unique to amphibious warfare. As you can see this process avoids the duplication of R&D efforts and prevents the waste of taxpayer dollars.

Before I begin to discuss some of the specific Marine Corps R&D programs in the FY84 budget request, I would like to highlight the successes we have enjoyed in 1982 in the development and procurement of new equipment. These successes would not have been possible without the support and sincere interest displayed by the members of this committee and the entire Congress, for which I am greatly appreciative. These systems have successfully completed the development phase and are now in the procurement phase.

In the near future our Marines will receive a new service rifle, the M16A2, an example of a successful product improvement program that resulted in a far superior service rifle at minimal R&D cost. The new Squad Automatic Weapon (SAW) will provide a long overdue automatic weapon capability in our Marine Rifle Squads. The Digital Communications Terminal (DCT) is a hand held date communications device that will provide rapid transmission of data which will significantly enhance the timely execution of the ground scheme of maneuver. The Position Location Reporting System (PLRS) will provide rapid, accurate location of friendly units, both air and ground, without dependence on voice radio communications. An urgent requirement for increased fire support and tactical mobility was satisfied in 1982 with the production decision for the Light Armored Vehicle (LAV). The LAV will increase both the firepower and tactical mobility of helicopter lifted maneuver elements. Another program entering production is the Modular Universal Laser Equipment (MULE). The MULE is a laser rangefinder and designator, that will allow artillery, air, and naval gunfire observers to accurately locate the position of targets for conventional artillery fire or aircraft bombing and effectively designate targets for laser guided munitions. The development and acquisition of these systems would not have been possible without your firm support. Thank-you.

MARINE CORPS PROGRAMS

Our fiscal year 1984 Marine Corps R&D Program aims toward a proper balance between critically needed modernization and continued support for current readiness and sustainability. Efforts in fiscal year 1984 will focus on firepower, maneuverability, command and control, intelligence, and combat service support, each of which are essential to the success of amphibious operations.

FIREPOWER

Infantry Battalion Enhancement

When we examine our firepower requirements our first and foremost concerns lie with the Marine rifleman who must engage and defeat the enemy in close combat. The Marine Corps has actively participated with the other services in the Joint Services Small Arms Program (JSSAP), which is aimed toward continuous development of coordinated small arms programs. Primarily, these programs focus on new or improved capabilities for rifles, machine guns, rifle launched munitions, and other small arms designed to support the infantryman in close combat. The success of the JSSAP is exemplified in the procurement decisions we made for the M16A2 service rifle, and the Squad Automatic Weapon (SAW), which will greatly increase firepower within the Marine rifle squad. Another firepower enhancement for the infantry battalion will be the MK19 40mm Machine Gun. This general purpose area weapon will provide increased offensive and defensive firepower against personnel and lightly armored vehicles. Efforts in the area of the Saboted Light Armor Penetrator (SLAP) projectiles are continuing under JSSAP. The SLAP program is designed to provide an armor piercing capability for the .50 caliber machinegun. A potential replacement for the current M-2 .50 cal machine gun is the General Purpose Heavy Machine Gun, which is a lighter and a more effective weapon system.

The Marine Corps has an urgent requirement for a weapon system designed to breach or destroy masonry/concrete and earthen/timber defensive positions. The Shoulder Launched-Multi-Purpose Assault Weapon (SMAW), currently in engineering development, will provide us with a bunker busting capability as well as a weapon for employment in military operations in urban terrain (MOUT). The need for a weapon of this capability has been highlighted in the lessons learned from the Falkland Islands operations and the actions that have occurred in the build-up areas of the Middle East. The SMAW Program continues on schedule with an Initial Operating Capability (IOC) of the 2nd quarter fiscal year 1984.

Infantry Mortars provide a rapid indirect fire capability to the infantry battalion. The Lightweight Company Mortar (60mm) is being fielded, and we are monitoring the Army's development program for the replacement of the current 81mm mortar. The Marine Corps recently began an evaluation of a 120mm mortar, under the Foreign Weapons Evaluation Program. The 120mm mortar, has the potential for providing immediate indirect fire support to the assault forces during the early stages of the amphibious assault, before significant artillery support has been established ashore.

ARTILLERY ENHANCEMENT

The delivery of effective fire support is dependent on accurate target location and identification. Our production decision for the Modular Universal Laser Equipment (MULE) will provide a precision ground laser rangefinder and designator that will be used by artillery forward observers, forward air controllers and naval gunfire spot teams. Precise location of a target will make conventional artillery and mortar fires much more accurate and effective. Also with the introduction of precision guided laser munitions such as laser guided bombs, Laser Maverick, and the Copperhead cannon-launched projectile, forward observers will also have the capability to achieve first round hits against stationary and mobile targets. MULE will be fielded during 1984.

In addition to locating and identifying targets, accurate ballistic computations are required for effective artillery fire support. The Artillery Computer System (ACS) is being developed to replace the obsolete Field Artillery Digital Automatic Computer (FADAC). FADAC, fielded in the mid-1960's and becoming extremely difficult to maintain, relies on error prone human interactions and computations that affect both timeliness and accuracy of fire support. The ACS will be a computer-based fire, control, and communications system that will record tactical information, process and compute firing data, and transmit that data from the Fire Direction Centers to the individual artillery pieces.

Anti-Armor

The Marine Corps is examining the total spectrum of anti-armor weapons to include the Lightweight Anti-Armor Weapon, a future medium anti-armor weapon, artillery guided munitions, laser guided bombs and other aviation ordnance designed for employment against enemy armor.

The Congressionally directed Joint Lightweight Anti-Armor Weapons tests which the Marine Corps is participating in with the Army, are aimed toward determining if there is a viable alternative to the Army's VIPER, which was designed to replace the M-72 LAW. We have carefully examined numerous foreign anti-armor weapons under the Foreign Weapons Evaluation Program. The Marine Corps requirement stresses the need to defeat the Soviet's medium main battle tank from an all aspect attack. In order to achieve this we are aware of the many tradeoffs that must be considered such as weight, length, cost and penetration. We will evaluate and analyze the test results in order to rapidly statisfy this critical requirement. We expect to report to Congress on the joint Army-Marine Corps results of this testing later this summer.

During 1983 we will complete structural changes to increase the number of Dragon and Tow II anti-armor weapons within the infantry battalions and regiments. Advancements in aviation ordnance continue to provide critically needed anti-armor capabilities that will complement our total anti-armor weapons arsenal. These systems include Laser Maverick, Hellfire, Tow II, 25mm Gun, and Gator Mines. It is important to point out that the successful defeat of any mechanized or armored enemy force will depend upon a well thought-out anti-mechanized plan that orchestrates all available anti-armor weapons and tactics and not merely the employment of a single anti-armor weapon system.

One last and very significant anti-armor program is the Mobile Protected Gun System (MPGS). Presently, our helicopter-borne assault forces land without highly maneuverable, direct-fire mobile protected weapons for employment against armored forces. The excessive weight of our tanks precludes their use in other than surface assault operations. To correct this deficiency, the Marine Corps and the Army have a joint program called the Mobile Protected Gun System. The program strategy provides for the analysis of the Armored Combat Vehicle Technology Program (ACVT), the formulation and agreement on a Joint Statement of Requirement, followed by conceptual design studies. A Defense System Acquisition Review Council Milestone I review will examine this data and determine which vehicle will advance into a demonstration and validation phase. All candidate armament systems for the MPGS are currently being evaluated by the Army and Marine Corps. The MPGS will add increased firepower and tactical mobility to the forces on the battlefield.

Among the results of the Armored Combat Vehicle Technology (ACVT) Program was the conclusion that medium caliber anti-armor automatic cannons (MCAAAC) are effective weapons on lightweight combat vehicles. The most efficient caliber was judged to be the 75mm MCAAAC. This weapon is capable for firing its telescoped ammunition at a rate of better than 1 round per second. The Marine Corps and Army have signed a memorandum of agreement to develop the 75mm MCAAAC as the primary armament for the Mobile Protected Gun System (MPGS). In addition, the Marine Corps is investigating the use of the weapon on the Light Armored Vehicle as the Assault Gun mission role vehicle.

The final area under Firepower that I cannot overlook is Air Defense. The actions in the Falklands and the Middle East have provided us with invaluable insight as to the criticality of having a solid, reliable, Air Defense System. The Phase III product improvement program for the Hawk missile system will provide both the Army and Marine Corps a significant upgrade of the current system. The software of the Hawk will be compatible between the Army and the Marine Corps, although the equipment configuration and concepts of employment differ. Initial Operating Capability for Phase III PIP of the Hawk System is 1987.

MANEUVERABILITY

Our adversaries, as you know, have placed a great deal of emphasis on maneuverability and tactical mobility. Maneuver Warfare is not new to the art of war; however, new emphasis is being applied as a result of technological advancements in weaponry and combat vehicles. As part of the Marine Corps modernization we feel it is essential to increase our maneuverability in countering the threat forces. The three programs I will discuss, Landing Vehicle Tracked 7A1 (LVT7A1), Landing Vehicle Tracked Experimental (LVTX), and the Light Armored Vehicle (LAV) are aimed toward providing combat assault vehicles to Fleet Marine Forces for enhanced surface assault capabilities and greater tactical mobility combined with firepower.

The Landing Vehicle Tracked-7 (LVT7) was introduced into the Fleet Marine Forces in 1971 with a planned service life of ten years. This surface assault amphibian vehicle has been a workhorse for our Corps for over twelve years. As many of you may recall, last year the Landing Vehicle Tracked-7A1 (LVT7A1) R&D program called for a service life extension of the LVT7 using state-of-the-art improvements that will provide us a solid and reliable surface assault amphibian vehicle through the year 1994. This LVT7A1 service life extension program is now underway. Improvements will include a new engine and transmission, night driving capability, more efficient ventilation system for troop and engine compartments, better fire protection, improved reliability and maintainability, and the addition of secure voice communications.

The 1990's follow-on vehicle to the LVT7A1 is the Landing Vehicle Tracked (Experimental) or (LVT(X)). In addition to its amphibious ship to shore capabilities, the (LVT(X) will be optimized to improve land warfare capabilities once ashore by improved cross-country mobility and agility, better troop protection, lower silhouette, and increased firepower. This program is currently in the conceptual stage and is projected to be operational in 1994. During fiscal year 1984 we will enter the Demonstration/Validation Phase with two contractors. Independent evaluation of the contractor's efforts will be conducted by Government Laboratories.

The third combat assault vehicle, the Light Armored Vehicle (LAV), which I mentioned earlier, is considered high priority within all functional areas of the Marine Corps. Our decision on a family of Light Armored Vehicles will meet our urgent requirement for tactical mobility and direct fire support. This Joint Army/Marine Corps Program involves the acquisition of essentially off-the-shelf combat vehicles, modified to meet our specific requirements, with the expressed purpose of improving the operational capability of both Services. The LAV family will be helicopter transportable and will utilize light armor for protection from small arms and artillery fragments. Last September a contract was signed to produce the light assault 25mm Gun Vehicle (LAV-25) with options to provide the other configurations needed by the Marine Corps. The other mission role vehicles are the Command and Control (LAV-C ^{2}), Mortar Carrier (LAV-M), Recovery (LAV-R), Anti-Tank (LAV-AT), and the Logistics Vehicle (LAV-L). Two other vehicles that will provide increased firepower and an enhancement to our air defense capabilities are the Assault Gun (LAV-AG) and the Air Defense Vehicle (LAV-AD). These two vehicles will be incorporated into the acquisition strategy after further analysis and a development decision. The LAV family, in addition to improving tactical mobility and firepower, will significantly enhance the rapid deployment force's capabilities in providing helicopter transportable maneuver elements in a timely manner throughout the globe.

Maneuverability must not be limited to land forces, especially when we consider the crucial ship-to-shore movement phase of the amphibious assault. The Navy's Landing Craft Air Cushion (LCAC) program represents a tremendous advancement in amphibious warfare. The LCAC provides high speed, a 60 ton payload, and can greatly increase the stand-off distance of the Amphibious Task Force, as well as obtaining the element of surprise. With this capability the enemy must spread his forces thin in defense of his coastlines. The LCAC will be transported by the LSD-41 and will also be transportable in the LHA and LHDX. This combination will provide a giant step forward, enhancing the amphibious assault capabilities of your Navy and Marine Corps Team.

COMMAND, CONTROL AND COMMUNICATIONS (C^3)

Earlier I stated that amphibious warfare is the most complex of all military operations. This is due largely to the enormous command and control requirements of a totally integrated force such as the Marine Air-Ground Task Force. As the assault begins, extremely close coordination of Air and Naval gunfire must be effected. Control of the assault craft and the phasing of logistics ashore require continous communications with higher, adjacent, and supporting units. Initially all command and control is held by the Commander of the Amphibious Task Force at sea. Once the situation allows, control is phased ashore to the Commander of the Landing Force. As you can easily imagine continous coordination is essential at all levels, during this critical period. The Marine Corps C^3 programs are directed at satisfying the unique requirements we have in the area of amphibious warfare and with our combined arms structure of Marine Air-Ground Task Forces.

Tactical Air Operations Central-85 (TAOC-85) is being developed to replace portions of our current Marine Air Command and Control System which is based on technology of the 1950's and 1960's. The air combat element of the Marine Air-Ground Task Force plays a significant role in the seizure of landing force objectives. Supporting air must be provided in a timely manner in response to the needs of the ground forces. This responsiveness can only be achieved by an air command and control system that can give the tactical air commander timely information necessary in making critical operational decisions. TAOC–85 will incorporate current technology computers, displays, and communications equipment necessary to counter future threats effectively. TAOC–85 will provide a significant reduction in the lift requirement, which is an important consideration for its deployability. It will also have the mobility and flexibility to be helicopter transportable and provide support that is appropriate to the size of the unit involved and the intensity of the air threat.

The Marine Integrated Fire and Air Support System (MIFASS) is being developed for the ground element of the MAGTF which has the uniqueness of a totally integrated combined arms capability. MIFASS will provide us with a system comprised of personnel, equipment, and procedures to effectively operate, control, and coordinate the delivery of mortar, artillery, naval gunfire, and close air support. Additionally, MIFASS will give us the capability to conduct fire planning and manage target information. The MIFASS system will interface with other command and control systems, such as TAOC–85 and PLRS. The Marine Corps is developing MIFASS unilaterally as no other system, either existing or under development, can integrate the control and coordination of all supporting fires, both aviation and ground, organic to the MAGTF.

Last year's procurement decision of the Position Location Reporting System (PLRS) will provide our commanders with the information needed to identify friendly units and their positions instantaneously. PLRS will provide precise real time position information for both air and ground units without dependence upon radio communications. The capabilities of PLRS will significantly improve the effectiveness of our tactical command and control systems.

The Marine Corps' responsibility in the Joint Tactical Communications Program (TRITAC), is the development of a family of unit level switches for all Services. The projected level of combat intensity in the future will demand a more responsive telephone switching system. Additionally, future high-speed communication integration requirements will have to be conducted by digitized transmission. To fill this need, the Unit Level Switch Program consists of two development efforts: a Unit Level Message Switch to transfer digital data securely and a Unit Level Circuit Switch to move and switch voice and telephone traffic securely. The Unit Level Circuit Switch is undergoing Developmental Testing and will complete Operational Testing this year. The Unit Level Message Switch will commence Developmental Testing in May 1984 and complete Operational Testing in November 1984.

COMBAT SERVICE SUPPORT

The Marine Corps actively participates in several logistically oriented programs of other Services. I would like to single out one area, however, that will provide enhancements in all functional areas. Tactical wheeled transportation is essential in providing logistic support to ensure sustainability of the MAGTFs. Our motor transport fleet's modernization efforts include the High Mobility Multipurpose Wheeled Vehicle (HMMWV) and the Logistics Vehicle System (LVS). These systems, now in the initial procurement phase, will provide mobility for weapon systems to traverse over previously inaccessible terrain and move containerized cargo and tactical shelter systems expeditiously. These and other combat service support programs will significantly enhance the logistics support capabilities of our Fleet Marine Forces (FMF).

The programs I have discussed are only a portion of the Marine Corps R&D efforts, although they do represent the more significant ones. We recognize the need for increased emphasis in the area of chemical warfare and appreciate your interests and support in this area. Our intelligence gathering capabilities have improved over the past several years and current efforts will provide our commanders and planners more accurate and timely data necessary in defeating the enemy threat. The All Source Imagery Processor (ASIP) will provide near-real-time imagery from tactical and national reconnaissance assets for immediate use by the ground commanders. ASIP will enhance the capabilities of the Marine Air Ground Intelligence System (MAGIS) and replace the current Imagery Processing and Imagery Interpretation Segments. The final segment of MAGIS, the Integrated Signals Intelligence System (ISIS) is under development and will provide a variety of signal intelligence products to the ground commander.

As you can see our development efforts will soon provide a number of very important systems to our Marines. To ensure that our Marines are capable of effectively operating and maintaining those systems, and employing them to their full potential, we have several R&D programs designed to improve their training. For each system we acquire, we conduct a detailed training analysis to determine the best method for Marines to operate and maintain the equipment. Training simulators are increasingly important in maintaining the skills of our Marines. For example, simulators are being developed to provide realistic training in firing DRAGON and TOW anti-armor missiles and represent significant cost savings as well as elevate the confidence level of Marines in their ability to effectively fire their weapons. The Simulated Tank, Anti-Tank Gunner System (STAGS) is a joint Army/Marine Corps development effort aimed toward providing effective training in the use of all current infantry anti-tank weapons. Tactical warfare simulation and manual wargaming will not only save millions of dollars in training exercises but improve the overall performance of our Marines and their leaders in combat.

Another cost effective program providing extremely valuable data is the Marine Corps Studies Program. Our studies and analyses are directed toward providing a greater understanding of issues and alternatives concerning organizations, tactics, doctrine, force plans, strategies, procedures, intelligence, and weapons selection. Consistent with the desires of Congress, we have maintained tight control of this program, carefully reviewing each proposed study requirement to ensure that only the most valuable ones are undertaken. We are requesting $4.6M in FY84 to support these efforts. Since we do not have an internal Marine Corps agency capable and devoted to studies and analyses, any reductions in our proposed Studies Program would have a long term impact in our ability to plan for the future needs of our Corps.

I would like to highlight one more area of deep concern to the Marine Corps, Naval Gunfire. In the beginning of my talk I emphasized seapower and its importance in our global response. An integral part of seapower and the projection of power ashore is readily available all-weather fire support. The reactivation of the IOWA class battleship reintroduces major caliber guns that have long been absent from our fleet. The return of the NEW JERSEY represents the first step in providing the massive firepower necessary in supporting seapower and power projection ashore through amphibious operations. We must continue to step forward in enhancing naval gunfire through programs like the conceptual 155mm naval gun, the five inch, semi-active, laser-guided projectile, and Seafire targeting system. Your support is strongly encouraged in this vital area.

SUMMARY

The fiscal year 1984 Marine Corps R&D program that I have discussed represents a balanced effort focusing on those that will provide a stronger and more responsive Marine Corps to meet the challenges which may lie ahead. We have a great responsibility to insure that the Marines we commit to combat are fully trained and properly equipped. If they are not, then we have failed in our responsibilities. Hopefully, I have provided you with some insight into the uniqueness of a fully integrated Land, Sea, and Air force that will continue to serve this Nation and its people as a force-in-readiness.

Mr. Chairman, and members of the committee, on behalf of the Marine Corps I thank you for this opportunity to present our R&D program. We look forward to your continued support.

[Questions with answers supplied follow:]

QUESTIONS SUBMITTED BY SENATOR WILLIAM S. COHEN

SHIPBOARD SUBSYSTEMS DEVELOPMENT

Senator COHEN. The Ship Contract Design project in the "Shipboard Subsystem Development/Land Based Test Site" is programed at a level of $80.9 million in fiscal year 1984. Provide a detailed break-out of how these funds will be used.

Admiral MONROE. These funds are for the Ship Contract Designs in the following categories:

Subproject	*Thousands*
AE	$10,076
T-AGM(C)	1,800
T-AGOS	500
T-AGS (C)	700

Subproject	*Thousands*
T-AO	1,100
AOE	4,900
T-ARC	500
BB	3,300
CG 47	1,100
CRAFT	4,955
CV (SLEP)	8,400
DDG 51	16,200
LHD 1	661
LPD 4 (SLEP)	4,200
LSD 41	300
MCM	825
MSH	4,150
SSN	2,000
Trident	13,700
Special imp. program	1,605
Total	80,972

ADVANCED NAVIGATION DEVELOPMENT

Senator COHEN. The Advanced Navigation Development program includes a project to develop a dual miniaturized ship inertial navigation system (dual mini-SINs) for use on board aircraft carriers. As this equipment is already in use in the submarine force, most of this funding was used for software and testing.

The project was developed using UYK-20 computers, however, and we understand the UYK-44 computer will be unable to use the software developed in this program for the UYK-20.

What will be the cost of developing additional software for the UYK-44, and when will this project be completed?

Why were you unable to simply use the older software? Are there any lessons here which may apply to introduction of the UYK-44 computer in other circumstances? Is there a timing problem?

Mr. PAISLEY. The cost to modify, test, and recertify the Aircraft Carrier Navigation System (CVNS) software is projected to be $600 thousand total. Most of this cost is attributable to the software recertification effort alone, with only a minor protion being expended to modify the software for use in the AN/UYK-44.

The modifications to the CVNS software which are required as a result of transitioning to the AN/UYK-44 are primarily due to the fact that the CVNS software utilized AN/UYK-20 instruction execution timing to time certain functions, in lieu of using the computer real time clock. This approach is not a normal programing practice. The instruction execution times of the AN/UYK-44 are designed to be significantly faster than those of the AN/UYK-20. Therefore, it is not necessary to use multiple delay loops to time program execution as was done in the CVNS. Since the practice of using instuction execution times vice a real time clock is not a common programing practice, other potential users should not be impacted by this problem during transition to the UYK-44.

NAVY TACTICAL DATA SYSTEMS

Senator COHEN. What is the function of Navy Tactical Data System (NTDS) and what are its current limitations?

Admiral NYQUIST. NTDS is the heart of the shipboard combat direction system and is designed for use by the individual ship's command and control team or an embarked warfare commander. The major functions of NTDS are to integrate and correlate sensor data; provide a combined air, surface, and subsurface tactical display; automatically or semi-automatically reflex shipboard weapon systems; and monitor and display weapon engagement status. Current NTDS limitations center on 1950 vintage computers and accessories which are difficult to maintain, costly to repair, are memory and processor limited and unable to fully integrate newly installed sensors and weapons.

Senator COHEN. What improvements should be made to NTDS, and why?

Admiral NYQUIST. NTDS improvements should include replacement of obsolete computers, displays and accessories; upgrading of equipment that is still useful to the latest configuration; and development of new software programs to integrate new sensors and weapons systems. These efforts will not only provide the shipboard Combat Direction System with an effective, real-time decision making capability critical to success in a modern combat environment, but will also improve equipment reliability and maintainability. These improvements are being undertaken by the Navy.

Senator **Cohen**. What is the tactical advantage of a higher-speed NTDS.

Admiral **Nyquist**. Higher-speed NTDS increases the rate and quantity of sensor data which can be processed, resulting in reduced weapons reflex time. Reduced reflex time is an essential element of our ability to counter the smaller, faster antiship missiles prevalent in today's tactical combat environment.

JTIDS

Senator **Cohen**. What is required to allow the Joint Tactical Information Distribution System (JTIDS) to be operated in a battle group equipped with NTDS?

Admiral **Monroe**. A Command and Control Processor (C2P) is required to interface NTDS with JTIDS and the TADIL J message standard.

The C2P will perform communications-type processing (e.g. formatting, framing, timing) for TADIL J. The C2P will further allow interoperability between TADIL A (Link 11) and TADIL J (Link 16), in those cases where some battle group platforms are not TADIL-J-equipped, or when operating with non-TADIL-J-capable NATO/allied forces.

TADIL J provides message standards to allow exchange of tactical digital data among JTIDS-equipped platforms.

Senator **Cohen**. What are the technical risks associated with developing the required specialized equipment?

Admiral **Monroe**. Since the C2P will be a standard Navy computer, the associated hardware risk should be low. The risk associated with developing software for the C2P is assessed as moderate.

Senator **Cohen**. What changes must be made to NTDS in order to make the most use of JTIDS?

Admiral **Monroe**. Current NTDS computers on CV's and CG's must be replaced with AN/UYK-43 computers, which have the capacity to handle the high volume and speed of data exchange between JTIDS terminals. The NTDS computer program must be written to accept and recognize a new data link message format. This new format has been in development since 1978 and is called TADIL J. When this is accomplished, NTDS will become a full participant in the JTIDS communications network. NTDS will talk to JTIDS through an interface device known as a Command and Control Processor. JTIDS is capable of moving large amounts of tactical data; TADIL J defines what the data is and the rules by which it moves. TADIL J permits data reporting accuracy consistent with sensor accuracy; allows tactical applications that are not feasible with the current TADIL A standard, such as direct fighter to fighter coordination; and permits the establishment of multiple tactical circuits tailored to the situation at hand, such as Electronic Warfare Coordination, Quick Reaction, and Strike Control. TADIL J is designed specifically to work in JTIDS communication architecture, exploits the inherent capacity and flexibility of JTIDS, provides increased tactical information content and accuracy, and was developed from the beginning as an interoperable standard.

Senator **Cohen**. What are the key technical problems which must be solved if JTIDS is to be smoothly transitioned into fleet use?

Admiral **Monroe**. Based upon our current understanding of risks, there are probably four key technical problem areas: The software interface design and integration of JTIDS with each host Combat Direction System. The integration of the TADIL J data link language into each host Combat Direction System. The integration of the C^2 Processor, which will allow JTIDS platforms to exchange data with non-JTIDS platforms. The development and integration of the UYK-43 computer and its associated software into the various platform Combat Direction Systems.

Senator **Cohen**. What is a certain date when we will know whether JTIDS can be used with the existing NTDS computer systems onboard ships?

Admiral **Monroe**. It is not planned to use JTIDS with existing NTDS computer systems, beyond one single installation intended solely as a test platform for operational test of the JTIDS terminals. The transition of JTIDS to the fleet is keyed to planned NTDS platform computer hardware and software upgrades. Shipboard JTIDS and its associated language, TADIL J, will only be installed on these upgraded platforms.

SURTASS

Senator **Cohen**. What are the limitations of SURTASS computer systems?

Mr. Cann. The present SURTASS system provides the essential capabilities required to detect and classify Soviet targets in use now. In order to improve the SURTASS essential capability to detect and classify projected Soviet targets, additional signal processing elements must be added.

Senator Cohen. Why do you need to develop additional software for this system?

Mr. Cann. For the improvements stated above, minor modifications to the existing SURTASS software will be necessary. While continuing to provide the essential capability for detection and classification, the modified SURTASS software will improve the probability to detect and the ability to classify future Soviet targets.

Senator Cohen. What is involved in adding a second UYS-1 signal processor and a UYK-44 computer?

Mr. Cann. Procurement of hardware (AN/UYS-1 and AN/UYK-44) and minor modifications of existing SURTASS software would be necessary for this effort. Following a successful test of this change, procurement of one AN/UYS-1 and one UYK-44 per SURTASS system would be required.

Senator Cohen. What computer programing language is being used and what changes do you intend to pursue?

Mr. Cann. The Navy standard High Order Language (HOL) SPL/1 is used for the AN/UYS-1 signal processing computer program and the Navy standard HOL CMS-2M is used for the AN/UYK-44 data processing computer program. The changes proposed include minor modifications to the existing AN/UYS-1 computer programs to increase the resolution of acoustic data presented to the shore operators.

ENHANCED MODULAR SIGNAL PROCESSOR

Senator Cohen. What were the results of the Milestone II Evaluation of the Enhanced Modular Signal Processor (EMSP) program?

Mr. Cann. The Milestone II review of the Enhanced Modular Signal Processor (EMSP) program resulted in a decision to proceed into a 48 month full-scale engineering development schedule with a parallel VHSIC insertion demonstration.

Senator Cohen. What is the programed date for granting approval for production (approval for service use) for EMSP?

Mr. Cann. EMSP is programed to enter limited production third quarter fiscal year 1986. Full production is contingent on user system's approval for production (AFP) decision. EMSP is programed to be available for AFP by Mid fiscal year 1988.

Senator Cohen. Please provide a complete cost profile for EMSP, from beginning until IOC.

Mr. Cann. The following R&D cost profile for EMSP development, VSHIC insertion and limited production is provided:

Fiscal year:	
1980-82	22.0
1983	17.6
1984	33.5
1985	53.7
1986	104.7
1987	101.3
1988	46.2

Senator Cohen. Describe the data package which the Navy expects to own upon completion of this program.

Mr. Cann. The Navy will own full data rights to everything developed under the EMSP contract including all requirements for full life cycle support. The data rights package required under the contract is sufficient to allow for competition for production of or upgrades to the EMSP in part or in its entirety.

Senator Cohen. Explain why the Navy desires to develop the EMSP instead of using commercially-available signal processors.

Mr. Cann. The Navy did in fact challenge the commercial marketplace to meet comprehensive systems signal processing requirements. The extensive competitive phase was structured to take every possible advantage of commercially available signal processors. The selection of the technology approach was based on the demonstration of the abilities of commercial vendors to meet the performance, reliability, and operability and maintainability requirements of the Navy.

ENHANCED MODULAR SIGNAL PROCESSOR

Senator Cohen. Will EMSP satisfy the Navy's image processing requirements?

Mr. Cann. Yes, EMSP will satisfy the Navy's image processing requirements.

NEW TACTICAL COMPUTERS

Senator **Cohen**. When the Navy begins to look for a replacement for the new UYK-43 and UYK-44 computers, what will be the characteristics you will demand? Provide a list which includes general features such as speed, memory, number of ports, cooling requirements, reliability, software constraints, maintainability and cost, and describe the relative importance of each.

Mr. **Paisley**. The requested information on detailed specifications and requirements for the Navy standard successor computer family to the AN/UYK-43 and AN/UYK-44 has not yet been developed. Advanced development effort leading to such specifications will commence in FY 85 and engineering development is projected to start in FY 87 depending on results of advanced studies. Full-scale production is expected to commence in 1990 or 1991. At present the Office of Naval Research is performing a study of high level language direct execution computer architectures which will help form the basis of the advanced effort. The Navy does have goals regarding the requested information which will be discussed in the following paragraphs.

Input/Output.—The primary form of input/output in the next generation computer family will probably be high speed serial and parallel bussing systems (most likely IEEE and/or industry standards) including fiber optics busses. In order to accommodate user systems employing current Navy standard I/O interfaces, these will be available as ordering options.

Speed.—Computer execution speed will be specified in terms of what the expected state-of-the-art of computer technology will make available in the late 1980's without inordinate cooling requirements (see cooling). Both user system processing demands and the technology are very difficult to accurately project at this time. However, with respect to user system requirements, heavy processing demands will be met by multiples of processors, which are expectd to be very small physically and relatively expensive. With respect to technology, the components are expected to use VHSIC or post-VHSIC technology with attendant VHSIC speeds. The specification for computer speed will probably not be written in terms of operations or instructions per second but rather in terms of time of execution of Ada compiled benchmark programs.

Memory.—As in the case of speed, next generation memory capacities will be specified in terms of what is expected to be available from industry. The length of the computer word will probably still determine memory addressability (four billion word memories in the case of a 32 bit word) and the goal of the Navy next generation program will be memory densities to exploit full addressability "in cabinet" or on-card in the case of single-card computers. The next generation Navy computer family will probably converge to a single word length rather than 16 and 32 bit standards in use today. It will most likely be a 32 bit or longer word.

The emerging state-of-the-art in industry will be watched closely in this regard. See further discussion of instruction sets and word length under software constraints.

Cooling.—The goal of the next generation Navy computer family is no cooling—i.e., no special provisions for cooling. This means low heat producing electronics technology which can be sealed in its case and exist indefinitely at the ambient surrounding temperature. If this is not achievable, then both air and water will probably be the primary means of cooling. The next generation computer family will be composed of compatible "building block" modules and cards which will be combined to develop as much, or as little, computing power as required. They will be used in all applications in all platforms and they will have to be designed to accommodate in one design many forms of cooling—i.e, air or water, convection or conduction, or even more exotic cooling media in some applications. The need for this flexibility is particularly driven by the probability that most of these computers will be directly embedded in other equipments and subsystems.

Reliability.—The Navy goal for next generation embedded computer reliability is "failure free" computers over a normal 10 to 20 year operational lifetime. Using conventional single-point debilitating-failure design approaches this goal will require a million hours mean time between failure for a complete computer, which is patently not achievable in the coming decade. However, it is expected that the goals might be economically achieved through use of redundant, fault tolerant, self healing design approach wherein a computer would be allowed to accumulate a number of individual failures and gracefully degrade to a specified performance threshold. Desirably, this final level of debilitating failure would not be reached during the operational lifetime of the computer. If this goal can be achieved, it would lead to a computer requiring no maintenance and no on board spare parts. This, in turn, would allow form, fit and function (F^3) computers provided by a number of manufacturers using any electronics technology since operational platforms will not have to be concerned with repairing the internals of the machine or carrying spare parts unique to a given computer type.

Software constraints.—It is expected by the time of the initial use of the next generation computer family all new system starts and major system upgrades will use the Ada programing language. The computer family instruction set will thus be optimized to target code compiled in Ada. Investigations are now underway to asess the state-of-the-art of Ada optimized instruction sets which will guide the FY-85 advanced development program to establish the new Navy standard instruction set architecture. It is not known at this time whether the computer family will have a requirement to also emulate the existing Navy standard 16 and 32 bit instruction sets. Such a requirement will be dependent upon a future survey and projection of software unique to these instruction sets which must be upward transported to these new computers. The Navy goal is not to require emulation of the current 16 and 32 bit ISAs. However, if it must be done, it is expected to present no constraint to the implementing electronics technology due to the ability of modern microcoded computers to emulate virtually any conventional instruction set. It is expected that the Navy will use a fixed prescribed Ada oriented instruction set, even if Ada compiled software does eventually achieve the goal of perfect target to target transportability. This requirement stems from the impracticability of recompiling software at sea in order to use a backup computer having a different ISA in a quick reaction battle casualty system reconfiguration situation.

Maintainability.—In line with the goal for failure-free computers the maintainability goal is zero maintenance. If a computer should experience a debilitating failure, which would most likely arise from external damage rather than internal component failure, it is expected that the computer would be replaced with a complete computer rather than performing on-board repair. The goal is that large platforms having many standard computers would carry one or two spare F^3 replacement computers. Smaller platforms would probably depend on replacing high priority system computers with low priority system computers and also in both cases systems will back each other up through switching and bussing systems wherein software reloads will allow a computer to carry a partial (graceful degradation) load of a damaged computer.

Relative importance.—The above factors are highly interrelated and thus only a rough order can be given. Items at the top of the list are considered most important. Items near the bottom are particularly close to each other in importance.

1. Reliability/maintainability
2. Ada optimization/software constraints
3. Speed/memory
4. Cost (this is interpreted to mean initial acquisition cost)
5. Cooling
6. I/O parts (most communications will be by busses rather than discrete I/O ports)

Senator **Cohen**. Is it true that support and software costs are now more significant than acquisition costs when procuring computers? Provide details when answering.

Mr. **Paisley**. The new AN/UYK-43 Navy standard "mainframe" computer will cost approximately $400 thousand each in production quantities and a typical shipboard set of spare parts to support the computer will cost approximately $170 thousand. This set of spares, however, will support from one to forty computers on a given platform because the spares are low consumption, insurance, items; and approximately ten percent of the spares will be consumed over a fifteen year lifetime. Toward the end of computer life new spares acquisition will have been terminated in order that the spares inventory will have been "burnt off" simultaneously with removing the last of the computers from active service. Because of the ability to support all of the standard computers of a given type on a single platform from one set of spares it is expected that the total 10 year Navy investment in AN/UYK-43 computers will be approximately one billion dollars whereas the cost of initial spare parts and 10 years of consumption will be approximately $100 million dollars. In addition it is expected that other centralized support costs for the AN/UYK-43 including centralized integrated logistics support (ILS), depot repair, standard support software, pre-planned production improvement, and field change kits will cost approximately $12 million per year or $120 million over the 10-year period. The ratio of support to initial acquisition costs is thus approximately $220 million over 10 years to one billion dollars in initial acquisition cost. It must be realized that this relatively low ratio of support costs is due to the Navy's policy of standardization. If proliferation of computers were allowed, it is expected that the total support costs of a multiplicity (35 for example) of computer types over a 10-year period would be approximately double the initial acquisition costs, or about $2 billion.

The question of acquisition software cost versus computer acquisition cost is much more difficult to quantify; however, a rough analysis follows—again based on the AN/UYK-43 computer. The $400 thousand dollar version of the computer will initially have two million words of in-cabinet memory which will eventually grow to 10 million. If a given user program develops software which uses 80 percent of the "average" memory size the user will develop four million lines of "target" code which translates to one million lines of "source" code—assuming current compiler efficiencies of approximately four-to-one. Current average cost for developing a "line" of embedded computer source code is around two hundred dollars. Thus the initial development cost of the applications software will be $200 million. If the current total life cycle support cost estimating ratio of 75 percent of total software cost in life cycle maintenance is used; the total life cycle software cost will be $800 million. If the project uses this software replicated in 20 separate platform installations (which is a rough Navy average), the total acquisition cost of computers will be eight million dollars (assuming single computer installations). Based on the example, life cycle software costs, on the average will thus be roughly one hundred times the computer initial investment cost. It must be realized that this average estimate can be off by an order of magnitude for any specific system. Also a system typically is composed of digital peripheral equipment as well as special purpose equipments such as missile launchers, guns, radars, etc.—thus total software initial development cost ratio to total system hardware investment and systems engineering costs is typically more like 10 percent of the total initial investment cost.

Clearly when compared to computer investment and life cycle support costs, the cost of software is dominant. As computer costs continue to drop and computer programing costs continue to increase, software costs will become an overriding consideration in computer acquisition policies and the ability to reuse already developed software through computer ISA standardization will be paramount.

ANTISHIP MISSILE DEFENSE

Senator **Cohen**. How many CG/CGN/DDG's are in an active status? How many DD's and FFG's?

Admiral **Nyquist**. There are currently 19 CG's, 9 CGN's, and 38 DDG's in an active status. There are 34 DD's and 32 FFG's in an active status.

Senator **Cohen**. What percentage of these ships are equipped with: MK 15 CIWS (Phalanx)? SLQ-32 electronic warfare equipment? MK 36 Chaff rocket launchers? NATO Sea Sparrow point defense missile system? Rolling Airframe Missile?

Admiral **Nyquist**. 27 percent of CG/CGN/DDG's, 21 percent of DD's and 34 percent of FFG's are equipped with MK 15 CIWS (Phalanx). 70 percent of CG/CGN/DDG's, 91 percent of DD's and 97 percent of FF's are equipped with SLQ-32 electronic warfare equipment. 79 percent of CG/CGN/DDG's, 91 percent of DD's and 97 percent of FFG's are equipped with MK 36 Chaff rocket launchers. 0 percent of CG/CGN/DDG's, 91 percent of DD's, and 0 percent of FFG's are equipped with NATO Sea Sparrow point defense missile systems. None of these ships are equipped with the Rolling Airframe Missile. The Initial Operational Capability of this missile is March 1988.

Senator **Cohen**. How many such ships will the Navy have in September 1985? What percentage of ships will have each of these self-defense systems at that time?

Admiral **Nyquist**. In September 1985, the Navy will have 21 CG's, 9 CGN's, 37 DDG's, 31 DD's and 45 FFG's. 51 percent of CG/CGN/DDG's, 65 percent of DD's and 73 percent of FFG's will have MK 15 CIWS (Phalanx). 100 percent of these ships will have SLQ-32 electronic warfare equipment. 100 percent of these ships will have MK 36 Chaff rocket launchers. 0 percent of CG/CGN/DDG's, 100 percent of DD's and 0 percent of FFG's will have the NATO Sea Sparrow point defense missile system. None of these ships will have the Rolling Airframe Missile. The Initial Operational Capability of this missile is March 1988.

Senator **Cohen**. What are the factors to consider when determining if the Navy is taking appropriate actions to provide point-defense systems at that time?

Admiral **Nyquist**. Factors to be considered in determining appropriateness of Navy action to provide point-defense systems include: Procurement/production rate of point-defense systems. Installation rate on high value ships. Integration of point-defense systems into ship's combat system.

Senator **Cohen**. Is Navy taking appropriate action to provide point-defense systems on board its ships?

Admiral Nyquist. Yes. Navy is taking appropriate actions to provide point-defense systems on board its ships. CIWS procurements have been accelerated. An improved missile for the NATO Sea Sparrow system, the RIM-7M, deployed in March 1983. The rolling airframe missile (RAM), a fire and forget missile to complement NATO Sea Sparrow or as a stand-alone system is in engineering development. Estimate IOC 1988. NATO Sea Gnat [deleted]. Target acquisition system (TAS) MK 23, providing autonomous response at greatly reduced reaction time, is now being installed in NATO Sea Sparrow capable ships.

SUBMARINE SONAR DEVELOPMENT (ENGINEERING)

Senator Cohen. Last year, the Navy estimated that $36.5 million would be required for submarine sonar development (Engineering). This year, $61.2 million is being requested. What changed between last year and this year which justifies such an increase?

Mr. Cann. During internal DOD review of the fiscal year 1984 budget, it was determined that insufficient test articles had been included in the RDT&E account for the development of the thin line towed array sonar (TBX) and Mine Detection and Avoidance Sonar (MIDAS). Additional funds were added in fiscal year 1984 to procure three engineering development models to ensure that adequate and timely testing is conducted. Both TBX and MIDAS are essential elements of the Submarine Advanced Combat System (SUBACS) which is planned for installation on the fiscal year 1983 new construction attack submarines.

Senator Cohen. How much is programed for repackaging three advanced processors (AN/UYS-1's) into one water-cooled cabinet? Why is this being done?

Mr. Cann. $17.1 million were obligated in fiscal years 1981-1983 to develop a single cabinet to house three AN/UYS-1 signal processors. The unit is called TRIASP. This development is complete and no fiscal year 1984 funds are programed for this effort. More acoustic signal processing capability than currently exists for the AN/BQQ-5 sonar was requested for necessary improvements. The capacity of three AN/UYS-1 signal processors was required. Because of the limited space available on a submarine, the hardware from three AN/UYS-1 signal processors was packaged into a single densely packed cabinet. Water cooling was required to remove the heat generated by the electronic modules.

Senator Cohen. What would be the impact of reducing this request down to a level of $36.5 million?

Mr. Cann. The development of the TBX and MIDAS systems would be put at great risk. Any delay would directly affect the development of SUBACS. This would delay delivery of the combat system to the fiscal year 1983 new construction 688 Class attack submarines resulting in shipbuilding delays and claims against the government for failure to supply government furnished equipment as stated in the contract.

TACTICAL EMBEDDED COMPUTERS

Senator Cohen. Several offices appear to exercise some degree of management authority over the Navy's standard computer or "embedded computer resources" program.

What is the relationship between the following, and what is the function of each? CNO mission sponsor OP-942; CNO R&D coordinator OP-982; CHNAVMAT program manager MAT-08Y; NAVSEA computer project office PMS-408; NAVELEX computer resource division ELEX-814; NAVAIR computer resources division AIR-543; ASN (RE&S) Navy Embedded Computer Advisory Panel.

Mr. Cann. OP-942 functions as both Resource and Program Sponsor. As Resource Sponsor, OP-942 acts as the central point of contact with the Material Command (MAT-08Y) to ensure that the Tactical Embedded Computer (TEC) program is responsive to established requirements. OP-942 provides such assistance as may be necessary to the formulation of requirements, development of alternatives and, with OP-098, establishment of priorities. As Program Sponsor OP-942 is responsible for determining program objectives time phased support requirements, and for appraising progress, readiness and military worth for a TEC in support of the goals and objectives of the Navy. OP-942 is the primary Navy spokesman on matters related to the requirement for and development/procurement progress of the TEC program.

CNO R&D Coordinator, OP-982, assesses RDT&E requirements in concert with force and mission sponsors and establishes close coordination with other OPNAV offices, Chief of Naval Material, and Chief of Naval Research, to ensure responsiveness of R&D programs to fleet requirements. OP-982 also ensures proposed development programs are properly structured, technically feasible, coordinates the RDT&E resource requirements, and coordinates the operational test and evaluation of equipments and systems.

MAT-08Y is the NAVMAT Program Director for R&D, acquisition and life cycle support of standard embedded computer resources (ECR). It is also Principal Development Activity (PDA) for Research and Development (R&D) and acquisition of standard embedded computers, support software and related digital equipment. MAT-08Y is responsible for developing ECR policies for NAVMAT, assigning SYSCOMS and/or labs as development activities, controlling budget resources for standard ECR R&D projects and appraising program progress and results on a continuing basis. It exercises overview management of all standard ECR projects but does not necessarily control the resources. For instance, the AN/AYK-14, airborne computer (NAVAIR; AIR-543) the AN/UYS-1 Advanced Signal Processor (NAVAIR; PMA-264) and the AN/UYS-2 Enhanced Modular Signal Processor (NAVSEA; PMS-408) are funded in separate Program Elements (PE's) and are managed directly by the organizations noted. MAT-08Y has oversight of all Navy program developments in ensuring that Navy standard ECR are used and processes all requests for waivers from TADSTANDs and established CNM policies.

PMS-408 is the Navy shipboard embedded computer resources project office. PMS-408 is the Development Activity (DA) responsible to the CNM for development, acquisition, and life cycle support of standard embedded computer resources assigned to NAVSEA by MAT-08Y. This currently includes the AN/UYK-43 and AN/UYK-44 computers and associated support software; acquisition, configuration, and life cycle management of existing and future computers and peripherals for shipboard application; and implementation of Ada for Navy use. PMS-408 responsibility also includes commodity management functions for the AN/UYK-20 and AN/UYK-7 standard computers and associated support software, and all standard shipboard computer peripheral equipment. DA responsibility for the AN/UYK-2 Enhanced Modular Signal Processor (EMSP) has been assigned to PMS-408, with CNO (OP-981) exercising direct management (PDA) control. The PMS-408 Project Manager reports directly to the Deputy Commander for Combat Systems (SEA-06), who is designated Project Director for discharge of COMNAVSEA's authority and responsibility relative to shipboard embedded computer systems.

ELEX-814 is the NAVELEX Computer Resources Division. ELEX-814 is the office responsible for matters related to embedded computer resources in the Naval Electronics Systems Command (NAVELEX).

AIR-543 is the NAVAIR division responsible for embedded computer resources management and is the DA responsible to the CNM for development, acquisition, and life cycle support of standard embedded computer resources assigned to NAVAIR by MAT-08Y. This currently includes the AN/UYK-14 standard airborne computer development and acquisition project.

Specific responsibilities of PMS-408, AIR-543, and ELEX-814 include but are not limited to:

a. Serve as SYSCOM focal point for DOD and Navy standardization efforts regarding computer resources for Navy systems.

b. Review and comment on proposed NAVMAT embedded computer resource policies such as TADSTANDs and NAVMAT instructions.

c. Serve as SYSCOM representatives on various NAVMAT/SYSCOM design review groups, working groups, and committees involving embedded computer resources.

d. Develop and promulgate embedded computer resource policy, and serve as SYSCOM point of contact for related issues.

e. Provide advice and guidance to SYSCOM project/program mnagers for all areas of life-cycle management of embedded computer resources.

f. Provide review and approval authority for statements of work, system specifications, software life-cycle management plans, integrated logistics support plans, test and evaluation master plans, and other program documentation for SYSCOM programs and systems that involve the use of embedded computer resources.

The Navy Computer Advisory Panel was constituted by ASN(RE&S) from qualified experts from both inside and outside the Navy to advise ASN(RE&S) concerning the quality and adequacy of the Navy's development plan to support, improve, or replace the obsolescent AN/UYK-7 and AN/UYK-20 computers while ensuring continued utility of current and future investments in software. The panel additionally considered the operational, technical, economic, and managerial issues in Navy planning from both a short and long-term viewpoint. NECAP recommendations concerning development, acquisition, and management of embedded computer resources in the Navy are reflected in the CNM Master Plan for Embedded Computer Resources.

Senator COHEN. Who is responsible for tracking hardware and software costs (including acquisition, maintenance and support)?

Mr. CANN. Each of the SYSCOM codes (PMS-408, AIR-543, and ELEX-814)track designated systems acquisition costs. As Principal Development Activity (PDA) for the development of new Navy standard embedded computer resources (ECR) MAT-08Y manages budgetary resources for standard ECR RDT&E projects. This information is provided to OP-942 who evaluates it in respect to overall Navy plans and objectives.

Senator COHEN. How does the Navy decide when it is cost effective to replace old computers and programs?

Mr. CANN. Navy plans and strategies for improving, enhancing, and developing embedded computer hardware, support software, and system development capabilities must be in a time-phased manner to provide operational capabilities needed. This involves shipboard, airborne, and shore-based embedded computer resources, and near-term incremental improvements to capabilities as well as long-term strategies. For definitional purposes, "near-term" extends from the present to 1988 and "far-term" extends from 1988 to the turn of the century. Embedded computer capabilities must serve both the current and future information handling requirements of existing combat systems, provide growth potential for the requirements of new systems, and remain operationally effective and economically supportable over a protracted life cycle.

The four fundamental factors to be considered when deciding to develop or convert to a new computer family are the capabilities of the new computer to:

a. Accommodate expanded operational requirements
b. Improve reliability and maintainability
c. Achieve lower life cycle costs
d. Avoid logistic obsolescence

As stated in OPNAV Notice 5200 of 15 December 1981, the AN/UYK-43 and AN/UYK-44 will be used for all new system developments to take advantage of anticipated lower unit cost, decreased power requirement, decreased size and weight, and increased performance. Also, AN/UYK-7 and AN/UYK-20 computers in existing systems will be replaced when system requirements expand beyond the capabilities of the existing computers and they must be replaced, or when replacement is the most cost effective way of meeting long term requirements. In each case, however, due consideration must be given to all costs associated with computer backfit (including installation, documentation, logistics changes, and training) which may severely impact an extensive backfit decision.

To achieve maximum competition during procurement and minimum system life cycle cost, the level at which standardization is applied is pivotal to the acceptance of the standard and its success in reducing cost. Examining successful commercial computer vendor production lines shows that families of upward compatible instruction set architecture minimize software support cost, while allowing evolutionary needed capabilities as technology allows or applications demand. Introduction of new successor standard computers on approximately a five to seven year cycle currently appears to offer the maximum opportunity for technology insertion with increased competition while minimizing life cycle cost and logistic support impacts and related operational availabilities.

ARMY ADA COMPILER

Senator COHEN. The Navy will use the Army-developed compiler for the Ada High-Order (Programing) Language (HOL). When will the Army complete the development of this compiler? Please describe the Ada compiler.

Mr. PAISLEY. The Army Ada compiler consists of a machine-independent section which is compatible with all computers and machine-dependent sections for use with specific target computers. The machine-independent section of the Ada compiler will perform a full system check, a check of all operations and parameters for type compatibility, and a verification that all semantic restrictions on the Ada language source text are met. The machine-independent section will then translate the source text into an intermediate language which will be converted by machine-dependent sections to executable machine codes for target computers. The Navy will use the machine-independent section of the Army developed Ada compiler. However, the Navy is required to develop its own machine-dependent sections for compatibility with Navy AN/UYK-43, AN/UYK-44, and AN/AYK-14 standard computers.

The Army has stated that the machine-independent section will be available for Navy use in mid fiscal year 1984.

DISPLAY PROCUREMENT

Senator **Cohen**. How many AN/UYA-4 standard Navy Tactical Data displays have been procured since 1973? Provide a year-by-year listing.

Admiral **Nyquist**. The AN/UYA-4 display is not a single piece of equipment but a data display system consisting of various types and quantities of components. As an example, the FFG-7 system includes 7 consoles plus ancillaries, whereas the CG-47 system includes 17 consoles and a different combination of ancillaries. From 1973 to 1982 87 UYA-4 systems were procured at a system cost which varied between $3.5M for an FFG-7 (45 systems) to $9.0M for the CG-47 (8 systems). A year-by-year listing of the 87 systems is as follows:

Fiscal year:	*Systems*
1973	3
1974	5
1975	8
1976	9
1977	21
1978	8
1979	9
1980	1
1981	12
1982	11

Senator **Cohen**. How many AN/UYQ-21 standard ship display systems have been procured since 1973? Provide a year-by-year listing.

Admiral **Nyquist**. Like the AN/UYA-4, the AN/UYQ-21 display system is a multi-component system of variable size and cost. The first UYQ-21 system was procured in 1979 with a total of 42 procured through 1982. A year-by-year listing follows:

Fiscal year:	*Number of systems*
1979	4
1980	0
1981	15
1982	23

Senator **Cohen**. What is the estimated unit cost for each model of the UYA-4 in fiscal year 1983? The UYQ-21?

Admiral **Nyquist**. The estimated unit cost for each model of the UYA-4 and UYQ-21 in fiscal year 1983 is as follows:

User	System cost (millions)	System description
UYA-4:		
FFG-7 class	$3.5	7 consoles, switchboard, various ancillaries.
CG-47 class	9.0	17 consoles, switchboard, various ancillaries.
CV-72	1.2	Switchboard and Beacon Video Processor.
UYQ-21:		
CG-47 class	5.5	Large screen display system.
CV-62/CVN-72	12.9	20 consoles, large screen display, ancillaries.
DDG-51	18.0	21 consoles, large screen display, ancillaries.
LHD-1	15.0	20 consoles, large screen display, ancillaries.
SQQ-28/SQR-19	1.5	92 consoles.

Senator **Cohen**. Who supplies this equipment?

Admiral **Nyquist**. Hughes Aircraft Corporation is the prime contractor for both the UYA-4 and UYQ-21 display systems as the result of competitive procurement procedures. Since being designated prime contractor, Hughes has initiated intensive competitive second tier multi-sourcing throughout the United States accounting for approximately 70 percent of the various system components. Major sub-contractors include International Signal and Control, Bell Aerospace System, ORBIT Instruments, Honeywell, AMP, Korrey, Navationics, Superior, and Hyperion.

Senator COHEN. What is the total amount budgeted for the procurement of UYQ-21, and UYA-4 displays (including modifications, and spare parts) in fiscal year 1984?

Admiral NYQUIST. Total amount budgeted in fiscal year 1984 is $160M. Of this total $50M is targeted for UYA-4 systems and the remaining $110M for the UYQ-21.

QUESTIONS SUBMITTED BY SENATOR GARY HART

SSN NEW DESIGN

Senator HART. Mr. Paisley, you discussed the follow-on to the SSN-688 in your statement. Do the design goals for this new submarine include:

Reduced size, as compared to the SSN-688? If not, is it anticipated that the new submarine may be larger than the SSN-688?

Reduced cost, as compared to the SSN-688? If not, is it anticipated that the new submarine may cost more than the SSN-688?

Mr. PAISLEY. The attack submarine new design is still in a preliminary phase. An assessment of the submarine threat has been made and a review of the research and development efforts in various technology areas which could support a new design SSN has been conducted. The assessment of the submarine threat indicated that a new SSN design must realize significant advances beyond those available through improvements to the SSN-688 class in the following areas:

[Deleted.]

Because the new attack submarine design is in a preliminary phase and the characteristics are far from being decided, the costs are not yet determined.

Senator HART. If the new submarine does not cost less than the SSN-688, what are the implications for the Navy's ability to afford an attack submarine force of sufficient size?

Mr. PAISLEY. Acquiring the required number of attack submarines is expensive and we continue to explore ways to achieve commensurate effectiveness for less capital investment; but, unfortunately, our efforts have not been successful. There simply is no alternative to the multi-mission SSN in today's arena. While the new attack submarine design is still in a preliminary phase and the characteristics are far from being decided, it is expected that the new design SSN will also be a multi-mission submarine.

SSN 688

Senator HART. Is it anticipated that the new submarine will incorporate any basic changes in the power plant design, as compared to the SSN 688?

Mr. PAISLEY. Compared to the SSN 688 Class, propulsion plant design studies for a new attack submarine are based on new advanced design reactors, major quieting improvements, and improved machinery designs leading to more compact plant arrangements. For example, compared to SSN 688 Class, new designs of large rotating components and lower propeller speed will provide substantial quieting improvements in the new attack submarine.

Senator HART. What research is now underway to design more efficient nuclear reactors for nuclear submarines?

Mr. PAISLEY. There is a broad research and development effort in the nuclear propulsion area. The effort covers development of new and modified cores, components, materials and systems. The principal new development is the next generation reactor called the Advanced Fleet Reactor. Work includes design, development, and fabrication of a prototype core and associated components, and installation and lifetime testing of the reactor in a land based naval prototype.

NON-NUCLEAR, NON-DIESEL-ELECTRIC SUBMARINE POWERPLANTS

Senator HART. What research is now underway to develop nonnuclear, non-diesel-electric submarine powerplants?

Mr. PAISLEY. There is presently no research underway that develops nonnuclear, non-diesel-electric submarine powerplants.

VARIABLE PAYLOAD/SHIP SYSTEMS ENGINEERING STANDARDS (SSES)

Senator **Hart**. Mr. Paisley, will the DDG 51 be a conventional design or will it include any modular/variable payload features?

Secretary **Paisley**. The DDG 51 will incorporate the Ship Systems Engineering Standards (SSES) for the weapon module stations. Portions of the Aegis combat systems are already modular in nature and these will also be used.

Senator **Hart**. If the SSES concept is not incorporated in the DDG 51, what is the first combatant in which it will be incorporated? When is it anticipated the lead ship will be authorized?

Secretary **Paisley**. The SSES concept will be incorporated in the DDG 51 to the degree that it is ready. Currently it is planned that the standards for the weapon module stations have been developed to a sufficient state that we are able to incorporate them in a ship design. It is anticipated that the lead ship of the DDG 51 Class will be authorized in fiscal year 1985. As the other standards for electronic and topside modules are developed, they will be available for future incorporation. It is planned that the first wholly variable payload ship incorporating all the Ship Systems Engineering Standards will be the Frigate of the 1990s.

Senator **Hart**. I strongly support the Marine Corps effort to develop a light, simple multiple rocket launcher comparable to the Soviet "Stalin Organ." What is the current status of the program?

General **Russell**. We have fabricated a brassboard model of a Field Artillery Rocket System (FARS) and are studying in detail all aspects of this system preparatory to spending the significant sums of money required to continue through advanced and into engineering development.

Senator **Hart**. Has the program been delayed, compared to the schedule envisioned for it last year? If so, why?

General **Russell**. The program has progressed generally on the schedule envisioned last year. We are at a natural, and needed, delay point, however, as we analyze what has been accomplished to date and what direction is most feasible and economical to pursue in the future.

Senator **Hart**. Is additional funding beyond that requested in the budget needed to move the program forward at a rapid pace?

General **Russell**. The funding requested in the budget is adequate for moving the program forward at this time. The problems of adapting a direct fire aircraft rocket, the 5 inch ZUNI, to an indirect fire, ground launched mode must be fully analyzed and understood before we attempt to move out at too rapid a pace.

Senator **Hart**. Could the program be accelerated if additional funding were provided? If so, what would be the maximum feasible accelerating, and how much additional funding would be required?

General **Russell**. The program could be accelerated by additional funding, but such acceleration would increase the risk of pursuing a dead end course. The Marine Corps feels that the funding requested is adequate for the required IOC.

Senator **Cohen**. The subcommittee stands adjourned.

Mr. **Paisley**. Thank you.

[Whereupon, at 11:15 a.m., the subcommittee adjourned.]

DEPARTMENT OF DEFENSE AUTHORIZATION FOR APPROPRIATIONS FOR FISCAL YEAR 1984

THURSDAY, APRIL 7, 1983

U.S. SENATE,
SUBCOMMITTEE ON SEA POWER AND FORCE PROJECTION,
COMMITTEE ON ARMED SERVICES,
Washington, D.C.

NAVY/MARINE CORPS STRATEGY

The committee met, in open session at 10:15 a.m., in room SR-222, Senate Russell Office Building, Senator William S. Cohen (chairman) presiding.

Present: Senators Cohen, Quayle and Nunn.

Staff present: James F. McGovern, staff director and chief counsel; James G. Roche, minority staff director; L. Wayne Arny III, Robert S. Dotson, Patrick L. Renehan, professional staff members; Mark B. Robinson, Judith A. Freedman, research assistants; Kathleen L. McGuire, staff assistant.

Also present: Jim Dykstra, assistant to Senator Cohen; Hank Steenstra, assistant to Senator Quayle; John Roddy, assistant to Senator East; Arnold Punaro, assistant to Senator Nunn; Frank Sullivan and Mary Shields, assistants to Senator Stennis; Kathleen Callahan, assistant to Senator Bingaman.

OPENING STATEMENT BY SENATOR WILLIAM S. COHEN, CHAIRMAN

Senator COHEN. The committee will come to order. I hope you will accept my apologies. My last committee was 20 minutes late in starting and that has held me up.

This is the last of the Sea Power and Force Projection Subcommittee hearings scheduled to review the fiscal 1984 budget. It is our intention to devote today's discussion to a review of strategy and policy questions pertaining to the Navy, and a last examination of a few of the Navy projects in that budget.

This morning it is my pleasure to welcome Mr. John Lehman, the Secretary of the Navy; Adm. William Small, the Vice Chief of Naval Operations; and Gen. Paul X. Kelley, the Deputy Chief of Staff and Prospective Commandant of the Marine Corps.

We could discuss issues relating to strategy and policy, but it is my hope that we will at least discuss several major questions in the following areas: the lessons of the British experience in the Falkland Islands, and the effect of those lessons on the Navy's strategy and procurement policies; a review of the fiscal 1984 shipbuilding and conversion plan; a discussion of the cost control issues pertaining to the Lamps Mark III program and the Tomahawk cruise missile program; the cost-effectiveness of leasing ships such as the TAKX's and the T-5 tankers; a review of the Navy's general strategy for meeting the national defense commitments and structuring our naval forces to meet those requirements.

I expect Senator Nunn and others to join us periodically through the morning but pending that, why don't we proceed with Secretary Lehman.

STATEMENT OF HON. JOHN F. LEHMAN, JR., SECRETARY OF THE NAVY

Secretary LEHMAN. Thank you, Mr. Chairman. I think looking at the Falklands at this point in the budget year is very useful. We now have a fairly good picture of what we believe the lessons to be learned are, and they have a great deal of relevance to the budget issues before this subcommittee.

Let me summarize the summary report, "Lesson of the Falklands," [1] I have submitted for the record. In the overall set of lessons to be learned, we find that, not surprisingly, most of the useful lessons are old lessons to be relearned rather than new ones. But there are some new ones, because this is the first naval conflict fought in the era of satellite and real time computer controlled command and control communications, intelligence, and so forth, and with new materials and equipments having been tested in combat for the first time. But by and large, it is the larger verities of warfare that have been reaffirmed and validated.

I would like to list what I believe are the most important lessons in order of priority. First, is that this was a classic case of the failure of deterrence. Deterrence simply being the principle that one is most successful in defending one's interests if one does not have to fight, and one persuades the adversary that injury will come to his interest greater than any gain if he resorts to force.

This did not happen in the Falklands because of a misperception by the Argentines that the United Kingdom did not have the combination of will and capability to carry out a military defense of its interests in the Falklands. I think this is something that Congress and the executive branch should pay close attention to, because there are many of the same voices today calling for the same kinds of actions that led to this failure of deterrence on a smaller scale in the United Kingdom.

I was a student in England at the time of the major change in policy which scaled the Royal Navy down and pulled back the focus of British defense policy to NATO. You will recall the White Paper of 1966 that Dennis Healy provided and the decision made by the Wilson government to cancel aircraft carriers because aircraft carriers were said to be no longer useable, vulnerable, and sitting ducks. So, the decision was made then to cancel the two aircraft carriers that were in the Royal Navy modernization plan. Also, the decision was made to orient British defense away from global capabilities and focus them entirely in the European NATO theater.

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[1] The summary report, "Lessons of the Falklands," appears on page 3295.

I wasn't the only one in England at the time. Apparently the head of the Argentine Navy, Admiral Anoya, who was said to be one of the principal planners of the attack on the Falklands, was naval attache at the time and he apparently was very heavily impressed by those arguments.

FAILURE OF DETERRENCE

So the first lesson is the failure of deterrence. The United Kingdom and the taxpayers in the United Kingdom have paid heavily for those false economies started 15 years ago, which have continued since.

Second, I would say the lessons regarding people are the most important. The quality, the training, and the morale of the people involved in the conflict on both sides, was the single most important determinant of the outcome of the conflict.

On the one hand, the all-volunteer professional forces on both sides performed extremely effectively. The conscript, least experienced elements of the forces, and here, entirely on the Argentine side, did not perform well at all. The all-volunteer naval, marine, air force, and army forces of the United Kingdom showed tremendous performance in all kinds of adversity; whereas the young, inexperienced Argentine conscripts, though in superior numbers, did not perform well. Yet the Argentine Air Force and some elements of their Navy, elements that were professional, career, all-volunteer, performed with courage, skill, and professionalism.

So, once again, I think this underlies the priority we, in the Reagan administration, have placed on people first. That is the most important element of our military recovery program: To restore the quality, the recognition, the compensation, the professionalism, and the readiness and training of people first. Equipment and ammunition is in a secondary order of priority.

INTELLIGENCE

The next lesson is, in my judgment, the second most important determinant of the outcome and that is intelligence. Overall, the superior, strategic intelligence available to the United Kingdom forces was a strong determinant in the outcome.

Both sides had very poor tactical intelligence and suffered heavier losses and lost many tactical opportunities because they did not have on-scene tactical intelligence of any appreciable quality. But in the view of some commanders, had the superiority of strategic intelligence not been available to the United Kingdom, the outcome would have been reversed.

The next lesson learned is one that really has a great many implications for all of the specific programmatic issues before this subcommittee. That is the importance in naval warfare of defense in depth, the layered defense and the management of a synergistic layering of defense capabilities, both active and passive, to deal with any level of threat encountered, not just in the high-threat areas.

Today, harm's way is everywhere because of low cost, high tech in the form of modern high performance aircraft, low cost diesel electric submarines and cruise missiles that are distributed now in 25 Third World nations quite apart from the major superpowers.

So, in order to go anywhere where there is a potential military threat to a nation's naval interests, naval forces must be prepared to deal with a high level of threat. That can only be dealt with by defense in depth. Many of the programs that we are requesting in this year's budget are premised on that fundamental assumption that our naval forces must operate simultaneously in four media: Under the sea for the submarine threat; on the surface; on all of the air and space superjacent of that operating maritime area, and fourth, the land areas that can dominate the maritime areas involved. All of this must be integrated. We must have the capability to deal with threats from all four media and do it simultaneously.

The United Kingdom did not have that capability. The Argentine forces did not have that capability. As a result, the United Kingdom suffered much heavier losses in their naval forces than they otherwise would have. They never established air superiority in the exclusion zone and were not even able to prevent aerial resupply going into the Falklands. Right up until the eve of surrender, they were unable to keep 20 year old and older aircraft off their ships and off their troops ashore. Even though their two small V/STOL carriers and the aircraft embarked performed superbly they never seriously challenged in terms of providing air superiority, the ability of the Argentines to attack and reattack the United Kingdom forces.

Not only did the British not have the numerical aerial superiority we have on our large carriers, starting with airborne early warning and interceptors, to use that battle space and the electronic warfare and other specialized aircraft to maximize the battle space, but their surface ships had not been modernized with the kinds of antiair warfare and antisurface warfare capabilities that are so fundamentally a part of the program we have put before you.

They did not have three dimensional search radars on their surface ships. They did not have the different kinds of active and passive electronic warfare capabilities that are essential layers of this defense.

They did not have, except for three ships, the essential last layer of close-in defense, with missiles and guns, that can actually engage very high performance cruise missiles.

They did not have the latest generation of antisubmarine warfare equipments for their surface ships that could have prevented one of the Argentine submarines from getting in among their task force, which apparently did take place. Nor were they able to successfully prosecute that submarine, because we know the submarine did get back safely to port. Of course, they were good enough to prevent that Argentine submarine from successfully prosecuting an attack on any one of their combatants.

So, there are a great many issues that come out of the conflict that we can talk about, if you wish, at some greater depth. These are lessons very much in our mind as we consider such things as weapons choices for the DDG–51 class for which we are asking long lead funding for this year; the fleet modernization program, the pace at which we incorporate close-in defense, the amount of money we put in to enhancing electronic warfare, and the speed with which we deploy the new high tech generation of technology that, once again, provides a very solid lease on life for the surface combatant for future naval warfare tasking.

LARGE VERSUS SMALL SHIPS

The next lesson learned I would like to talk about is the issue of large versus small ships. Clearly, there were some obvious lessons that come out of the Falkland engagement. The single most important one is that the proposals by some "reformers" to go to cheaper, less well-armed smaller ships and disperse them is a very false economy indeed, as demonstrated by the fact that the four combatants that the British lost were all low mix, cheap, and not well-armed dispersed ships. The UK's naval forces had a total of 16 ships hit and the amount of damage to the smaller, less well armed, reformer type ships was proportionally far greater than the amount of ordnance actually put on the targets.

The use by the UK forces of two V/STOL carriers was very illustrative of a great deal of controversy as well, because these ships performed extremely well. They are well-designed ships, one designed from the keel up, as a helicopter ASW carrier, the other was a converted conventional carrier. The total displacement between them was 50,000 tons. They were loaded beyond capacity and, in effect, operated 30 fixed-wing aircraft during the conflict. That compares to a 90,000 ton *Nimitz,* which operates 80 to 90 high performance, fixed wing aircraft.

So you see, as the ships get smaller for operating aircraft, the cost effectiveness gets much less attractive. In other words, by halving the tonnage, you much more than half the number and capability of the aircraft that can be operated.

Those aircraft, for instance, were only able to mount fighter cap stations of about 20 minutes duration with only two sidewinders and those cap stations were generally about 90 miles out from the force and unfortunately, without airborne early warning and without three dimensional surface search radars. They were dependent on catch-as-catch-can kinds of intelligence inputs and the Mark I eyeball for their target acquisition. Moreover, those two carriers succeeded in delivering only a total of about 200 bombs on the target.

Now again, one has to look at both the half empty and half full part of the glass. They performed extremely well, provided an invaluable war fighting resource, but they were not even in the category of providing the kind of war fighting capability of even our smallest large deck carrier or their own medium deck carrier, the H.M.S. *Ark Royal,* that was retired 5 years ago.

Senator COHEN. Let me interrupt for a second, because I would like to make the point that all reformers are not necessarily created equal. [Laughter.]

And being a part of that so-called military reform caucus, I don't want to take umbrage at your suggestions, but as you know, I've supported the concept of a large ship. Nonetheless, even some of those reformers who have advocated small ships have also been advocates of the Harrier; which I know is near and dear to the heart of General Kelley who has come up here to testify on behalf of the Marine Corp's interest in having a close-in support from the AV-8B.

So, I would say the same reformers who have been advocating smaller ships have also been very strong supporters of the Harrier, which I know the Navy and Marine Corps are strongly behind.

Secretary LEHMAN. I am glad you pointed that out, Senator. I was certainly not directing criticism to the reform caucus, only some reformers.

Also, I do not want to be interpreted as being critical of the AV-8B Harrier, because it performed in the Falklands very well. It had over a 90-percent availability throughout the conflict. It flew in virtually every kind of weather, including zero-zero minimums, that would have prevented even normal large carrier operations. It had a fine air-to-air record, although it really did not get into any dogfights. It used its small air-to-air radar with the AIM-9L missile very well. It shot down at least 20 Argentine aircraft, 16 with the Sidewinders and 4 with the guns. Overall, the AV-8B made a real contribution by forcing tactics onto the attacking Argentine aircraft that very much limited their flexibility, and hence, the damage they were able to inflict. Overall, they did a very, very credible job.

Again, one has to not compare them with an F-14, but compare them with nothing. They provided a great deal of valuable support and contributed materially to the outcome of the engagement.

Senator COHEN. I think the distinction is we view a smaller carrier in the context of being a supplement to, rather than a substitute for, the larger deck carriers. For example, I know you support the LHD-1 program.

Secretary LEHMAN. Exactly. Right.

Senator COHEN. Those Harriers would act in concert.

Secretary LEHMAN. The small carriers are potentially a very valuable asset for our Navy, as well as the Royal Navy. But they can never substitute for the capability of a large deck carrier. I am very pleased at the decisions by the United Kingdom to cancel their plans to reduce their numbers. As you know, they are committed in NATO to provide four antisubmarine warfare small carriers.

We have some very real progress in the last 2 years of exercises in integrating, as we did just the last 3 weeks in the Caribbean in the Atlantic Fleet readiness exercise, the Invincible airwing into the battle group tactics and air defense plan and it has worked extremely well. They are a very useful asset, indeed.

The real aviation stars of the battle were the helicopters on both sides. They were the workhorses that operated in antisubmarine warfare. They sunk some of the smaller combatants. They provided the logistics over the beach and over the battlefield, the replenishment at sea. They provided command and control relays and links. They provided the only reconnaissance that was really able to be carried out, medical evacuation, and so forth. On both sides, helicopters were extremely important aviation assets. The C-130, once again, was a major workhorse on both sides for aerial refueling, for intra- and inter-theatre lift, for special warfare operations, and so forth.

Land-based air was a mixed picture. On the one hand, the Argentines operated at the extreme end of the range capabilities of the A-4 Skyhawks and the Mirages that they operated. But they were very effective, because of the skill and professionalism of their pilots using fundamental iron bomb ordnance. They managed to hit 16 United Kingdom ships, and if all of those weapons had been properly fused and delivered, the British commander has said that the outcome could have been reversed.

So the performance of Argentine naval aviation and Air Force, particularly with the A-4's, was very respectable, indeed. With the use of strategic bombers by the British the picture was different. There were 5 Vulcan strategic bombers sent on conventional interdiction missions, 3 of them carrying 21-thousand-pound bombs. Targeted against Stanley Airfield, each run took a minimum of 11 complete tankers to do the single mission and their effect on Stanley Airfield was essentially zero. There were two other Vulcan missions flown against Argentine ground radars using antiradiation missiles and those two were essentially nonproductive.

Those are some of the highlights of the lessons we have learned. I would like to continue a few more of the essential ones by asking Admiral Small and General Kelley to continue.

Senator COHEN. Could I ask that during the course of your commentary you discuss what, if any, changes you propose.

Secretary LEHMAN. I would like to do that in the summary.

STATEMENT OF ADM. WILLIAM N. SMALL, USN, VICE CHIEF OF NAVAL OPERATIONS

Admiral SMALL. Good morning, Mr. Chairman.

Senator COHEN. Good morning.

LOGISTICS

Admiral SMALL. I would like to touch, for a moment, on the subject of logistics, which is another important lesson learned in the Falklands. I know you have heard the old saying that in time of military crisis the amateurs like to talk about strategy and the professionals like to talk about logistics. Unfortunately, like most sayings, that is not completely true, because too many professionals concentrate on strategy themselves.

But I think it is true that the outcome of many campaigns is determined more by logistics than strategy. Certainly this is true in the case of the Falklands, because in that context, logistics was a major success for the United Kingdom and a major failure for the Argentines. This is true despite two very significant asymmetries in the situation, the first being, presumably, the preparedness on the part of the Argentines for a campaign and the unexpected nature of that campaign to the British.

The second asymmetry is one of distance. The United Kingdom forces had to be logistically supported over an 8,000-mile train whereas the Argentines were supplying with some advance notice a war area only 400 miles from their coast.

Despite these asymmetries, the United Kingdom was singularly successful in its effort and I would like to briefly discuss the reasons.

The first was the ability of the United Kingdom to mobilize resources which were otherwise employed. Since 1939 there has been a British program called STUFT, ships taken up from trade, to recall and rapidly mobilize with civilian crews a wide variety of commercial ships to provide break bulk container cargo, fuel, and ammunition.

In fact, during the days following the outbreak of the war, some 50 ships were taken up from trade and refitted, in some cases, and prepared to move south. Additionally, five fishing trawlers with stern gate capabilities were taken up by military crews and outfitted for minelaying and minesweeping operations. The ability of this sizable force to quickly get enroute with a capability to conduct underway replenishment operations and support amphibious operations in a remote area was remarkable indeed.

The second major criteria which enabled this success to take place was the ability of the Royal Navy to establish sea control over the entire route, and of course, to have the waypoint of the Ascension Islands. This was done primarily because of the mobility of nuclear-powered submarines which were able to get down to the scene rapidly and enforce the declaration of the 200-nautical-mile radius exclusion area, which was promulgated by the United Kingdom at the outbreak of hostilities.

The invisibility of these submarines and their mobility caused an impression of capability which really kept the Argentine forces off the sea lanes, which were themselves routed out far enough to avoid the issue of a lack of air superiority, which the United Kingdom never established.

This permitted in turn, the ability of the Argentines to continue their resupply of the Falklands, because they never were deterred seriously from airlifts into the Falkland Islands throughout the war. This was done by C-130's and other aircraft, usually at night. But the lack of United Kingdom air superiority the Secretary has mentioned was a significant factor that enabled the Argentines to execute some level of support.

Unfortunately for the Argentines, there was no intermodal capability within the Falklands to redistribute the supplies, so much of the war material that was delivered successfully into the airfield at Stanley was never transshipped out over the rough and inhospitable terrain to forces in the field. They suffered gravely from that lack.

A third factor, of course was the nature of the war itself. It was short enough so that a significant number of ships who were down there, in fact, there were over 119 ships and more than 200 United Kingdom aircraft that were deployed south to the war provided the initial sustainability and logistics train and did not have to be replaced. If it had had to have been maintained over a much greater period of time it would have been difficult indeed.

NEED FOR SEA CONTROL

In fact, there was some indication that the war ended in the nick of time from the standpoint of logistic supportability. The lessons we have learned, and I am sure the Secretary will reiterate the major ones in his summary, are the need for sea control along the sea lines of communication and the corollary that you have to be able to control the air as well in order to conduct an aerial supply.

The second one was we found again that consumption, particularly of expensive high-tech ordnance of the type the Secretary mentioned, always exceeds expectations and plans. Therefore, while you think you have enough sustainability, in actual fact, you do not. The United Kingdom was severely tasked to draw upon a very small reserve to support the level of effort they did have.

We learned again the importance of being able to call upon civilian ships in rapid order. As you know, the administration has increased over the past 2 years the number of U.S. merchant ships in the Ready Reserve Force able to go on berth within the first 10 days of mobilization from 29 to 77. This has been a major initiative in the Navy in recent years and one that has been well supported.

We also continue to insist upon the incorporation of so-called national defense features in merchant ships that are U.S.-flag constructed, so they will have an innate capability upon recall to perform, military missions, such as underway replenishment of fuel and ammunition, through the provision of the proper equipment and the construction of the ship.

The Secretary made the point about the importance of strategic air refueling capability. The only waypoint along that 8,000-mile logistic train was at Ascension Island, and had it not been for the ability of the United Kingdom to rapidly configure aircraft and conduct some rather exiting air refueling operations, the Vulcans and other land-based air would not have made it to the scene of combat.

Also, again, I think for the logistician, the importance of cargo offload facilities, which greatly hampered the United Kingdom forces when they did reach the South Georgia Islands, the ability to transship material to literage and move it ashore and then move it around terrain which is very difficult to traverse, was demonstrated quite pointedly.

Finally, in the logistics area, when you realize that all of this logistic support and the travial that took place was required to support a small war, it dramatizes, it seems to me, the strategic sealift required and the preparation required to support a major conflict in a remote area. So, the essentiality of strategic mobility and the reliance of that mobility on the capability of U.S. naval forces to interdict the threat to shipping through a forward strategy have been demonstrated. We never could afford to put resources along that kind of a SLOC to contend with in-place forces, and it would be much better from the standpoint of strategy to interdict those threats near their point of origin.

OPERATION OF SUBMARINES IN THE FALKLANDS

So, those were the essential elements of the logistics exercise. I would move on, sir, if I may, to the operation of the submarines in the Falklands. The asymmetry was apparent there, too, as you know, in that the Royal Navy had six submarines in operation during the war, one of which was a diesel, while the Argentines were able to get two of their four diesel submarines underway; the other two being deterred by mechanical problems in port.

Of the two Argentine submarines, the first, the *Santa Fe*, was lost on the surface in the early days of the conflict in South Georgia during part of the movement of forces ashore. It was damaged by helicopter, beached by the Argentines, and never returned to the fight.

The other ship, which was a German-built type 209, the *San Luis*, was able to operate throughout the campaign, but as the Secretary mentioned, she was not able to do any damage, partially because of her lack of mobility, even though there is some indication she was in proximity to the naval task force there.

San Luis also had some significant material problems within the ship, particularly in the torpedo firing and electrical systems, which did not allow her to generate accurate fire control solutions on those targets which she did have. So, her effectiveness was curtailed by material problems in the ship, as well as her lack of mobility.

After the Conqueror's destruction of *General Belgrano* and the subsequent withdrawal of the Argentine Navy to territorial seas and therefore exclusion from the war under the terms of the British Rules of Engagement, the Royal Navy submarines turned their attention to intelligence collection and anti-merchant-ship operations and were quite effective in those roles.

The one diesel the United Kingdom had down there was used in the movement of troops in support of special operations ashore. The conditions in the Falklands of shallow water and very noisy ambient acoustic conditions, I think, made a case that both of the navies had the right kind of forces. The diesel submarine is a very practical ship for people who need to operate in local waters, particularly when the conditions are as they are in the Falklands. But when those submarines need to range far away from home ports and cover distances rapidly and remain free of the surface of the ocean, nuclear power, of course, has no challenge.

So, we believe that the utility of nuclear-powered submarines for forces such as U.S. naval forces and the utility of diesel submarines for nations whose operations are primarily in home waters was certainly validated in the Falklands war.

Senator COHEN. You would find a barrier of defense against Soviet submarines coming out of a particular choke point. Would a diesel submarine have some utility?

Admiral SMALL. Yes, I think they have some utility and we plan to use some of our allies' diesel submarines in that role. However, because of our force levels and dispersal and deployment times to get to those choke points on warning, and to arrange our submarines to cover the dimensions of those areas, it really requires more mobility by a major portion of the force than an all-diesel barrier would give you.

For example, in the Mediterranean, the allies have in the aggregate, roughly 40 submarines, but only 4 of those, the 4 U.S. submarines presently there, are nuclear powered. So, we are counting on 90 percent of that force to be diesel submarines, and yet the nuclear-powered ships are absolutely vital to the strategy there to be the swing forces to cover the area.

I would like to move ahead, sir, to the next lesson learned, if I may, which is one of vulnerability and survivability.

VULNERABILITY AND SURVIVABILITY

I would like to emphasize the point the Secretary made with respect to high- and low-mix ships and to accentuate the difference between vulnerability, which is the probability of being hit by a weapon, and survivability, which is the probability of being able to continue to operate after having been hit.

It seems to me in the era of precision-guided munitions that being small is not a haven from being hit from a weapon, if it is not deterred by some form of layered defense. So, if you are unable to provide those layers of early warning to get the platform that will be launching the weapon or offensive antiair warfare systems and point defense systems to defeat that weapon as it comes in, then being small, when you are about to be hit, is a significant disadvantage rather than an advantage.

In the area of survivability, of course, the larger you are, the more capability you can have built into the ship to withstand damage. I think this is demonstrated in the war. Those ships not equipped to promote their own survivability suffered significantly from what I would consider to be marginal damage.

As you know, the cause celebre that got early press attention was the *Sheffield,* which was hit by an Exocet early on in the conflict. We got all kinds of fragmentary reports about the aluminum superstructure having melted and the Exocet having blown out the internals of the ship. In actual fact, the *Sheffield* is an all-steel ship, and in no case in the war was it demonstrated that aluminum would burn in the course of damage.

It was also proven that the Exocet missile that hit the *Sheffield* never exploded. What actually burned was the unexpended fuel, and it was really the lack of adequate damage control equipment and firefighting procedures within the ship which caused its loss.

Senator COHEN. I recall when that occurred, they had a Newsweek cover story showing a ship on the cover in the gunsight. The caption was "Are Big Ship's Doomed." Of course, that was the wrong question to ask. The question should have been "are little ships doomed or are all ships doomed?"

Admiral SMALL. That was a reformer caption, I believe, sir.

Senator COHEN. Pardon?

Admiral SMALL. Perhaps that was a reformer caption. [Laughter]

I think the lessons we have learned in the areas of vulnerability and survivability are not new lessons. They have been emphasized to us in a very forceful way before in Vietnam and Korea, for example. We have profited as rapidly as we could from those lessons in the design of our ships and the reinforcement of things related to survivability.

READINESS AND TRAINING

The main point, I think, that we have documented again, was the readiness and training of the crew. The Secretary has made the point that the crews in the Royal Navy ships were well trained. That was certainly the case. However, in the area of damage control and firefighting, readiness was adversely affected by the design of the ship. Damage control central, for example, was just that, a central point, which, when put out of action, affected very adversely the capability of the ship to manage its own problems.

The diesel generators that provided the electricity that drove the firepumps were also not redundant. As a result, in the case of *Sheffield*, fire main pressure was lost and the crew was unable to fight the fire. The fire spread because throughout the ship there was disposed a lot of flammable materials: curtains, floor coverings, wooden paneling, and much of the material was toxic.

Some of the plastic that had been used to cut down wear and tear on the spaces did not burn, but created fumes which caused a loss of life due to the toxicity of the materials.

We have been very fortunate in having in the U.S. Navy irascible gentlemen, Admiral Bulkeley, who has been the nemesis of those in the Navy who would like to hang pictures and put wooden furniture in our ships, by insisting in his routine inspections that no flammable, combustible, or toxic material be found.

We have also validated the need to run our electrical cable internally in the ship, instead of on exterior bulkheads, and have put them in armored trunkways. We have reinforced the notion that essential spaces within the ship, such as damage control central and the magazines, be armored by special steel.

In the case of the DDG-51, for example, we are using HY-80 structural steel in all of our vital spaces and to construct damage control and firefighting barriers throughout the ship and we are dispersing our fire main pumps and fire main loops redundantly throughout the length of the ship.

So, from the standpoint of survivability, the lesson has brought out again, sir, the crucial nature of providing those facilities in the initial ship design.

I would like to turn very briefly to the rules of engagement, which is the penultimate lesson learned that the Secretary has referred to in his opening statement.

Rules of engagement are the means whereby civilian command authority and senior military people exert control over operational commanders regarding the limits of their action. Rules of engagement are particularly important in times of crisis, because they must limit the flexibility of the operational commander, who is often prone to anticipate and react to events, heightening the likelihood of war in a self-fulfilling way. But once the conflict does start, rules of engagement need to be flexible enough so that they can be applied on a categorical basis by the operational commander in order to get his job done.

This is particularly true in the high tech era we are talking about, where communications are sufficiently good that micromanagement by people who are not on the scene and do not understand the emotion and tempo of the engagement is apt to lead to misjudgments. The Rules of engagement that were given to Admiral Woodward were very categorical.

The war was limited at first to 200 miles around the Falklands, second, to the area outside territorial seas. No engagement or pursuit over the continental land mass was allowed. Ships could be declared hostile only under very specific circumstances. The war was contained in a way that allowed it to be pursued efficiently and brought to a close in relatively rapid order.

We need, I think, to put much more thought into our Rules of Engagement, not only the U.S. national rules, but our NATO rules, and this is being done, expedited to a degree, by U.K. experience in the Falklands.

Finally, sir, the issue of sustainability. To make the point again that I made earlier, this conflict reminded us once again that the rate of consumption of ordnance and other spare parts and consumables is always higher than our models indicate it will be.

Therefore, we are always concerned, that those items of sustainability and readiness, which ought to be procured in larger number are always the ones which the budgeteers go after. It is very easy to cut back on the procurement of ordnance and spare parts and other consumables, because they are the kind of things that spend out and are almost subliminal in a budgetary sense.

However, it seems to us essential that we in the U.S. Navy fill up our magazines and weapons launchers in the ships we have at the present time.

Senator COHEN. This was discussed, as I recall. There were some proposals to reduce our goals of stockpiling ammunition from 90 days to 45 days. What is your assessment of that?

Admiral SMALL. I do not think our goals have been reduced, I think our procurement objectives have been reduced from the planning objective in order to emphasize the near-term need.

Senator COHEN. Reaching the goal is unattainable.

Secretary LEHMAN. Senator, there are still major questions at the senior level on what actual expenditure rates would be. The computer models we have used in the past, when tested in the 1973 war, in the Lebanon engagement and in the Falklands have not matched actual expenditure rates of torpedoes, air-to-air missiles and so forth.

As it is today, our current inventory of threat ordnance for the active fleet is inadequate. To suggest that somehow we are spending too much on buying these as the Bundy Group and so forth have suggested, is ridiculous, because, whether it is 90 days or 45 days, we are a long way from being to the point where we can say, well we may have too much of this or that.

Senator COHEN. We have a real problem in terms of the increased range of the Soviet bombers, the increased range of their submarines in terms of interdicting any kind of resupply of the United States to the European allies. Wouldn't that warrant a greater emphasis on the resupply capability, rather than reducing it.

In other words, shouldn't we have more, rather than be satisfied where we are?

Admiral SMALL. Yes, sir. However, as you know, we have taken great steps in the last 2 years to improve our logistic capabilities in those areas through the addition of POMCUS in Europe and afloat pre-positioned supplies in southeast Asia and the Mediterranean.

There is no question about the essentiality of a sea-based resupply in war and the maritime campaign that has to exercise the necessary sea control to keep our vital sea lines of communication world-wide open for our use.

Secretary LEHMAN. We have put, as you know, Senator, more into sealift than has been put in since the Second World War. However, there is no way we can fund sufficient merchant marine and Government-owned sealift to fight a war of attrition, which is why it is so essential that we have a forward strategy, that we not permit the Soviets the advantage of a sanctuary, for instance, north of the GI-UK gap, to allow them to range their 280 attack subs out into our sea lanes, because we have only to date 600 bottoms in the entire U.S. Merchant Flag Fleet. We lost considerably more than that in most years of World War II. At the first day of the war, we were turning out one ship a day. Now, we are turning out essentially zero ships for the commercial trade. So, if we allow the Soviets to take the offensive in submarine warfare, in my judgment we will lose the conflict.

Admiral **Small**. Sir, General Kelley will discuss amphibious operations.

STATEMENT OF GEN. PAUL X. KELLEY, USMC, ASSISTANT COMMANDANT, U.S. MARINE CORPS

General **Kelley**. Thank you, Mr. Chairman. I would like, however, since we have been discussing reformers this morning, to make one opening comment. Until my confirmation hearings, at least, I must stress that I am totally ecumenical and some of my best friends are reformists, at least for the time being. [Laughter.]

Senator **Nunn** [presiding]. I have heard so many things attributed to reformers, now, that I think the term has become so oversimplified that it seems to me those who are accusing the reformers of everything are doing the same kind of oversimplification about the views of reformers, that they have accused the reformers of doing to them. There are a lot of different reformers.

General **Kelley**. Point conceded, sir.

Senator **Nunn**. There is this feeling that reformers speak with one voice, but no one speaks for me on defense issues, except myself, and I think Senator Cohen feels the same way.

AMPHIBIOUS OPERATIONS

General **Kelley**. I think the analysts would find, in terms of the amphibious side of the Falkland Island operation, an interesting operation, to say the least.

When you look at the distances alone, it boggles your mind to think that the United Kingdom is some 3,900 nautical miles from the Ascensions, and the Ascensions are some 8,000 nautical miles from the Falklands. Even in the Falklands, as we looked at the two separate and distinct areas, the Falklands, themselves, are over 800 nautical miles distant from South Georgia.

Also, when you look at the opposing forces on the ground, it gives the analyst an interesting perception. When one realizes that the United Kingdom, at the peak of its strike power, had 11,000 men on the beach, whereas the Argentinians, the defender, had some 13,600 people on the beach, and all of these, I might add, were in fixed positions.

But, with that said, it is also interesting to note that in 3½ weeks of ground combat, in the Falklands, that the Argentinians suffered 300 killed in action, whereas the United Kingdom's forces suffered 125.

I think, to stress the Secretary's point on people, if there was one thing I could single out as being the most singularly important ingredient in the success in the Falklands Islands, it had to be people. One has to realize that the forces of the United Kingdom were the cream; the Royal Marines, the Paras, the Ghurkas, were all front-line units in superb physical condition. They were professionals, above all, and were also extremely well led.

Whereas, if you looked on the Argentine side, you had to recognize the Argentinians were, for the most part, conscripts who were poorly trained, and who had inferior equipment.

In fact, it is a fairly well-documented fact from the Royal Marines, that on numerous occasions during their night operations against the Argentinians, front-line positions were detected by the Argentinians' snoring. That is an example of the lack of professionalism we are talking about.

Senator COHEN. General Kelley, I would assume you and Secretary Lehman would disagree with the administration's position of putting a pay freeze on those in the military today.

General KELLEY. There is always one question one would like to defer to one's senior. That is one question I would like to defer to the Secretary of the Navy. If you would wait and allow him to answer that question first. [Laughter.]

There were problems and I think they highlight the potential problems we have with the amphibious service in the United States today. Let me run over those with you.

First of all, because they had to move out very rapidly from ports within the United Kingdom, there was a tremendous amount of reshuffling that had to go on in the Ascension Islands. That was a time-consuming reshuffle. It was sort of taking the eggs and splitting them out in the right baskets. But that is something that would not happen to us

We have fully capable ships. We have the right ships in the right places and we could move from our ports of embarkation directly to amphibious objective areas without that kind of inordinate delay.

The STUFT ships that Admiral Small mentioned, I think, are very interesting. Most assuredly, the bulk of the cargo, the bulk of the supplies and equipment that went to the Falklands, was carried in the so-called STUFT ships.

One must, of course, put this in proper perspective. The essential ingredient of a successful amphibious assault is what one would call the force rate of buildup; how rapidly we can build up essential combat power. It starts at absolute zero on the beach and lasts until the last Marine lands. How fast can we build up that force to accomplish the mission?

In this case, if you took a U.S. Navy amphibious ship, you would find that we could roughly off-load some 90 tons per hour, whereas, the so-called STUFT British ship off-loaded roughly 20 tons per hour, which is hardly sufficient for a rapid force rate of buildup.

There was also a lack of sufficient landing craft and helicopters for this force rate of buildup. Using some 16 landing craft and a modest number of helicopters to lift 11,000 people ashore together with supplies and equipment could hardly be classified as rapid.

There was extreme concern expressed by the Royal Marines and other members of the UK's forces over the use of commercial luxury liners to transport the troops to the amphibious objective area.

This was an extremely high risk operation and I think one must recognize that while the UK's forces were extremely innovative, literally manning the rails of the ships with machineguns for antiaircraft fire with one and one tracers and doing all sorts of innovative things—had they gone against a determined enemy or a determined pilot with a lucky shot, the results could have been catastrophic had one of those ships sunk with the numbers of people who were aboard.

The landing went without British air superiority. That is not the way one would want to conduct an amphibious operation. Fortunately there was an element of luck there. Two amphibious ships were hit, resulting in a significant loss of life. But, had they had a more determined enemy, with better capabilities, the results could have been far more serious.

Senator COHEN. Wasn't that a situation where they attempted to land those personnel without having a Rapier on land to give them some air defense?

General KELLEY. The Rapier firing units were ashore; however, they support or were masked by the high terrain features.

Senator COHEN. Is that contradictory to sound tactics?

General KELLEY. It is contradictory to sound tactics, in a sense. We stress that the amphibious assault should not be conducted unless you have air superiority. You could get air superiority in a number of ways.

During the initial stages, the only way you can have it, literally, is with a weapons system. The bottom line is that the British recognized all of these shortcomings and they adapted their landing plans to make use of what was available. I do believe that through innovativeness, and they would be the first to tell you through no small measure of luck, they were highly successful.

Had they gone against a determined, well-seasoned, professional fighting force, on the other hand, I think the results would have been significantly different.

One of the great equalizers, if you will, or the great advantages that the Royal Navy and the landing force had, was in the availability of naval gunfire. I think it is significant that 18 4.5 inch guns fired over 7,900 rounds. And, if one takes the landing in South Georgia as an example, with devastating accuracy, they were able to bracket the garrison at South Georgia and by the time they landed, the garrison was so demoralized they gave up without firing a shot. That is the kind of thing one can do with effective fire support from the sea.

All of this leads us to conclude that we are very much on track. If these are good lessons learned, then the 600-ship Navy will be better and better as we analyze the Falklands campaign; particularly the Navy portion of that 600 supporting the Marine Corps; amphibious lift capabilities for the Marine amphibious force, and the Marine amphibious brigade.

That, coupled with the very innovative maritime prepositioning concept, gives our country, Senator, a very viable force projection capability that will be able to do the job. But I would like to close by emphasizing that in the final analysis, it is that highly disciplined, that physically fit, that well led, imaginative marine that will seize the beachhead.

Senator **Cohen**. Thank you very much, General Kelley. Does that complete your testimony?

Secretary **Lehman**. Yes, Senator. There are some summaries of what we are doing about these lessons and that will get us into the program we have before you and I would like to discuss those.

I think there are some undramatic things, which perhaps I could review quickly for you that we have done already to move money around.

Senator **Cohen**. Perhaps before you do that, Senator Nunn would like to ask a question of General Kelley.

Senator **Nunn**. Let me ask General Kelley one question. I was briefed by an admiral, a British admiral, and I asked the question in terms of technology assessment of equipment and so forth: what is the main lesson you, the British, learned in terms of the Falkland Islands and equipment?

I was surprised. This was not said facetiously. He said, in spite of all of our equipment and so forth, and what worked well, we found we still did not make a boot that does not leak. He seriously said that had the war lasted another week or 10 days, that most of the foot soldiers, the British would have had such severe foot problems because of damp feet and bad conditions, that they would not have been mobile.

I took it as a serious comment and the question is, I guess, General Kelley, do you agree with that, and if so, do the U.S. Marines have a boot that does not leak?

General **Kelley**. I agree with it. In fact, I can amplify on it. The ground force commander, Gen. Jeremy Moore, told me that had the weather continued for 1 more day, he was highly skeptical as to whether or not he could keep his troops up on the front lines, because he was starting to experience severe cases of trenchfoot.

To answer your question, sir, yes, we do have a boot—a significantly different boot from what the British have. It is a thermal boot. I have worn it. I consider it to be most effective. The problem with our thermal boot is that the individual must take it off periodically to keep his feet, which get too warm in a thermal boot, from getting too wet from perspiration.

So ours is a reverse discipline, but I understand the problem. It was a problem and could well have, in 24 hours, turned the tide of the battle, had the British been forced to withdraw because of this.

Senator **Nunn**. Was it frostbite they were having trouble with, or footrot, or both?

General **Kelley**. Primarily trenchfoot or footrot.

Senator **Cohen**. Where are your boots manufactured?

General **Kelley**. I hope Maine, but I would have to check it for the record, sir. [Laughter.]

Or maybe half in Maine and half in Georgia. [Laughter.]

[The information follows:]

BOOTS

The boots are manufactured by the Bata Shoe Co., Belcamp, Md.

Senator **Cohen**. Secretary Lehman?

Secretary **Lehman**. Sir, we have already done some movement in the scope of the funding we have for 1983 and even some 1982 funding to take immediate action on some things like CHAFF. We felt that we were not moving in CHAFF, and we are now moving faster to get CHAFF out to the fleet in sufficient amounts. The pace with which we have been deploying the CIWS system, we believe needed to be speeded up and we are doing that. The CIWS has had teething problems but it is very effective. We have had almost 100 percent kill rate against drones in recent testing and we need to get it out in the fleet.

Similarly, we need to get out in the fleet active sonar classificational improvements, and the SLQ 32 jammers. These are undramatic kinds of programs which have tended, both in congressional cuts and administration cuts, to fall behind.

Battle dress is another. The Royal Navy wears flash protection gear for all hands. It turned out to save quite a bit of injury from flash burns, and it is very inexpensive. We are now going ahead on an expedited basis to do the same thing. In the area of synthetic fabrics, we have started and are accelerating the getting rid of synthetics in uniforms aboard ship. Polyesters are very much easier to keep, but they fuse to the skin in flash explosions, fires and so forth. We are going back to cotton.

Rolling airframe missile systems and things like that are under way. We will have a full report of that. Your staff is already familiar with a good many of them.

I would like to get into the major programs that are in this year's shipbuilding program and how they relate to these lessons learned again.

SHIPBUILDING PROGRAM

First, we have a deep concern in the Department of Navy, and Department of Defense, that we are letting our shipbuilding base erode irrevocably. We have just been going through negotiations with Boston, New York, Seattle to name a few for what facilities are available to home port our expanding Navy.

One of the lessons, without talking specifics of ports, is the shocking way that facilities, seaport facilities disappear, once a shipyard closes or the fleet pulls out. Most of the pier space that helped fight World War II in Boston and New York is now covered with condominiums, boutiques, and housing and other things and are simply not reclaimable.

The trend is we will probably lose another three major shipyards this year that will go out of business. We will not need the boutiques in wartime. We will need that industrial capacity.

So, let me make an overall plea, that the SCN budget is at the absolute bare minimum this year to keep a minimum naval shipbuilding base, let alone the base to once again get back into the merchant marine business when the current recession in merchant shipping is over.

We are at 17 ships and 6 conversions this year. Any major hits on that will mean more yards out of business, more people permanently moving out of the maritime trades, forever lost.

So, that is one major lesson I would urge that you keep in mind. General Kelley talked to the naval gunfire support. The battleship remains, as I testified 2 years ago, the best deal for getting more fighting capacity to sea for the lowest cost that I can find in the entire budget.

The battleship *New Jersey,* the *Iowa* class, can put 803 tons of ordnance and naval gunfire support on the target in just half an hour. One battleship could have provided more firepower than all of those 18 gunships or guns that the British had in the Falklands.

We have the equivalent of 19 destroyers in one battleship just for naval gunfire and it covers 90 percent of the targets, for instance, in Cuba, just to name one hypothetical example.

We've been making much progress in the integration of land-based air, in the U.S. Air Force particularly. I hope you will have a full debrief of our two major recent fleet exercises, one just completed Readiex in the Caribbean and the other just beginning in the North Pacific. They demonstrate how well we can integrate U.S. Air Force assets into our war and sea tactics. The battleship, given land-based air support from Florida, can provide almost a one ship blockade of the Caribbean. The battleship is so effective and so able to deal with high threat and so forth, that it remains a top priority for out budget this year.

Also, we have the LSD-41 class. We are asking for authorization for a multiyear buy of five ships over 3 years. We are going to save a quarter of a billion dollars by that multiyear competition and keep the pressure of competition on the program.

I think General Kelley has well laid out the need for this unique amphibious capability and the LSD-41 is the way to do it in a low cost effective way.

The Aegis program is exceeding all expectations. We have the *Ticonderoga* joining the Atlantic fleet shortly. It has performed superbly in its tests against drones, against simulated targets in the electronic warfare environment. We need to get those ships out to the fleet.

As you know, we have brought competition into that program with dual sourcing and we need a minimum of three ships a year to keep that competition going, because if we go all or nothing, we will lose the capability in the yard that loses.

If we go, for instance, to two Aegis and we go winner take all, the losing yard will lose its infrastructure to remain competitive. If we have to give one to each, we have totally lost, we have got the worst of all worlds with low learning curves and allocation. So, we have got to have three Aegis cruisers to stay competitive.

Similarly, in the submarine business, last year we had to avoid the allocation of submarines. We went winner take all and one yard won the two and that has had adverse effects on maintaining the skilled worker base and the learning curve at the losing yard. We need three attack subs.

This year we have got to have the DDG-51. The Falklands demonstrates that, particularly against diesel subs, surface ships are very, very effective, but they need high tech. They need the modern advances in signal processing that we now have developed in the SQS-53 sonar, the SQR-19 towed array and the Lamps, above all, the Lamps helicopter. We have the capability to detect the most quiet targets at extended ranges and the Lamps greatly enhances our capability to go out there with a computer solution and kill their target once detected.

So, we have put the surface ships back into business. The DDG-51 is the essential element to protect the underway replenishment groups, convoys, amphibious groups, and we need the numbers that are in the program. Again, it is like the F-18. I cannot tell you exactly how many ships are in that program, because it will depend on the out years. But this is a replacement. It is not a 600-ship Navy ship, if you will. It is to modernize, in the 1990's, the aging DDG classes that we have today.

The Tomahawk provides another good example of an antiship and a ship-to-shore attack capability that is an essential part of the program. We have three versions of it.

The first is already operational on the U.S.S. *Guitarro,* today. The first surface ship to deploy with the land attack conventional and antiship version will be the battleship U.S.S. *New Jersey,* which deploys in June, and which will be a major capital ship of the Pacific fleet, with Tomahawk operational.

We have had problems in the management of the program, which I believe are now under control. We have established, for the first time, believe it or not, a prime contractor for the program.

Those are some highlights and I think there are lessons really applicable to every major program element and we would be happy to explore them further.

PAY CAP

Senator COHEN. Thank you very much, Mr. Secretary. Perhaps we could start with the pay cap. Once again—since personnel is at the heart of the Navy and the Marine Corps; high morale, top quality, well trained, ready forces are more important than equipment and machinery—what is your opinion about the pay cap?

Secretary LEHMAN. Senator, this committee has made, I think, historic progress in establishing what directly results in the quality one can get by putting money where it pays off such as in the bonuses, in the Nunn-Warner bill and so forth.

That essentially, in our belief, brought us back close to comparability with the pay raise that went into effect in 1980 and 1981.

Last year we had a 4-percent cap imposed by Congress, which we objected to at the time. But we ended the year with 3.9 percent inflation, so in retrospect, we do not feel that the pay cap hurt us.

Over the first 6 months of this fiscal year, inflation has averaged 1.9 percent and hopefully it will go down even further for the remaining 6 months to October. So, I believe the pay freeze will not do serious damage to comparability for the troops.

Much more worrisome is the signal it gives that we are revisiting the sad era of the seventies when pay caps became commonplace. I fully sympathize with, and accept, the President's decision that the only way to get a Government-wide cap on COLA's and retirement, civilian as well as military, was to exempt no one. Therefore, I understand the requirement for it and support it. But I believe you will find unanimous support from all of the service chiefs and secretaries and the Secretary of Defense for deferring programmatic issues rather than not funding the President's commitment to a get well pay raise in next years budget.

Senator COHEN. Just for the rcord, it was the President who put the 4-percent pay cap on last year and Congress went along with that proposal. It was not Congress who imposed it.

Second, this is the second year in a row. We have now had a drop from 7 percent to 4 percent and a freeze at 4 percent was imposed with a promise that next year we will take care of you.

I gather that you and General Kelley, who will speak in a moment on this subject, would not testify against an initiative by either Senator Tower, myself, or Senator Nunn to pass something in addition to a 4-percent pay increase.

Secretary LEHMAN. A 4-percent pay increase for next year, which is the 1985 budget should be directly related to the amount of inflation that has been suffered and the loss of standard of living of the troops. We also strongly support the targeting of whatever pay raise is budgeted. But for this year I emphasize I fully support the President's budget.

Senator COHEN. General Kelley, according to one magazine, you will be one of the reformers of the Joint Chiefs. Have you seen that clipping?

General KELLEY. Unfortunately, I did. Yes, sir. And I disavow any knowledge of it. I was no party to it, Senator. Yes I do support the President's program and I would just like to share with you what may be counter to a common misperception—the way the troops feel.

In January, the marine barracks in Sigonella, after hearing of the pay freeze and listening to the President, wrote him, the President, a personal letter signed by each and every man, down to the last private first class. They told the President they understood the economy of the country, they understood why he had to do what he did, and they, as a group, wanted to let him know that they fully supported his program.

So, sometimes we misunderstand, I think, the impact of morale. The troop's morale and its effect on retention is measured in a number of ways. I must say we must weigh this very carefully.

When you put good, modern equipment in the hands of a young marine, and he knows he has the finest fighting equipment in the world, that has a great impact on retention.

When you allow him to train properly in the field and we have the O&M dollars to support that kind of training, that is important for morale and retention.

When you build them the proper housing and give them the proper facilities, that is all important to moral and retention.

So, we cannot just take one segment of the things we do for these young marines, soldiers, or sailors, or airmen and say that is going to be the big impact on morale and retention.

I firmly believe that we must articulate the case to the young marine, soldier, sailor, airman about the economy. I have listened to Members of this Congress who have told me that they have 31-percent unemployment rates in their districts, which is devastating. But until we cool the economy down, a temporary freeze on the pay—and I emphasize the word temporary—will be understood by our marines, and I believe, if correctly articulated, it will be supported.

Senator **Cohen**. Did you have one of those spontaneous generations of letters to the President, or anything like that from the bankers about withholding 10 percent? Did you have no comment on that?

General **Kelley**. I have no comment. This was one letter by a number of marines.

VULCAN BOMBER

Senator **Cohen**. Secretary Lehman, you mentioned the Vulcan being ineffective. Would you elaborate on that?

Secretary **Lehman**.You mean the Vulcan bomber, not the Vulcan phalanx. The Vulcan bomber, the use of it, to interdict airfields was not dissimilar to our own experience in Vietnam. We never successfully closed the MIG bases around Hanoi by the use of Navy or Air Force attack air bombing. Bombing runways is a pretty silly game with previous munitions. Hopefully, we will make advances with runway buckling ordnance.

Senator **Cohen**. Are we dealing with submunition technology?

Secretary **Lehman**. Yes, we are developing it, but it will always be easier to fill up a hole or smooth out a rumple in a runway than to put the hole there. So, that is not really the best way to go after it.

Those Vulcan strikes were essentially ineffective. We would much rather be able to go after the aircraft and support equipment on the bases themselves. That is another reason why *New Jersey* is so attractive. With its armor piercing round, one can take under attack virtually all of the MIG bases in places like Cuba and most of the MIG bases in places like North Korea and punch right through the hangarettes, bunkers, and caves where the real high priority targets are.

Senator **Cohen**. Is that what they do in Nicaragua?

Secretary **Lehman**. I think the range in Nicaragua is similarly attractive for those kinds of applications, if necessary.

SHIP REACTIVATION COSTS

Senator **Cohen**. Let me talk about the *Missouri*. The question has been raised by members of this committee as to whether somehow they were misled in terms of the cost of reactivation. As I recall, your testimony and the commitment received from you indicated the *New Jersey* was a test case.

In other words, you made a pledge, signed in blood, that you would bring that ship in under $320 million. But my understanding is, that that in no way represented what the total reactivation cost would be for the *Missouri*.

What is your understanding?

Secretary **Lehman**. We are confident we will bring *Missouri* in ahead of schedule and under cost as well. But there are essential hedges necessary, which we have budgeted for, for the unknown unknowns. When you open a turbine you do not know, until you pull it and inspect it, how extensive the refurbishment will be. There is more uncertainty in the estimates for the *Iowa*, the *Mis-*

souri, and the *Wisconsin,* because it has been longer since they were pulled out.

We had firmer data on *New Jersey.* But so far in the *Iowa,* the news is just as good as it was in the *New Jersey.* We are confident we will, in fact, possibly even make a 6-month early delivery for the *Iowa* and we see no reason why the *Missouri* will be any more difficult than the *Iowa.*

So, we believe we will be able to deliver ahead of cost and ahead of schedule.

Senator COHEN. What are the cost estimates of that now? Is it in excess of $500 million?

Secretary LEHMAN. The total reactivation cost for *Missouri* is $443 million in fiscal year 1983 constant dollars. We have, in fact, reduced the estimate over what we presented to the committee last year.

Senator COHEN. There was an item in yesterday's Washington Post about a Brookings study done. I recall something in the neighborhood of $158 billion reduction they would propose over a 5- or 10-year period, I am not sure which because they included the elimination of 3 aircraft carriers, about 11 cruisers, and a number of other ships.

Have you had a chance to look at that particular proposal?

Secretary LEHMAN. I have and I find it perfectly consistent with the view the authors have had, particularly Bill Kaufman, who was the principal author.

He, as you know, was an adviser to the Secretaries of Defense who carried out the policies that ended up with a major focus on Europe, to the detriment of the rest of the globe. He, and the Brookings authors have remained consistent to the view that you do not need a major naval force. It is a clearcut difference of view in the concentration on Central Europe, as if one can secure our national defense interests globally by maintaining a conventional balance in the central front of Europe. I think this is a bankrupt and discredited view. But there are still plenty around town who hold it and the Brookings study as an example.

Certainly you can save money by getting rid of three aircraft carriers. You could save even more by getting rid of 15 of them, but the question is, we have commitments to meet and they certainly cannot be met with the kind of Navy we inherited from the Carter administration, in which Bill Kaufman was a major influential adviser.

Senator COHEN. Several members, at least one member of this committee, has expressed an interest.

Senator NUNN. Excuse me, I think it ought to be added, he was an adviser to the last three administrations. We shouldn't convert this into Democrat and Republican.

Secretary LEHMAN. I agree.

Senator NUNN. I think that is the tendency in this administration and I think it will come back to haunt you, if it has not already.

Everything is either this administration or the previous. The Navy you inherited under Carter was built under Ford and Nixon. The Navy you have there now was built under Carter, Ford, and

Nixon, and the next President will have the Navy built by Reagan. It will not be this President.

Secretary LEHMAN. Senator, I think if you will review my testimony for this year and last year you will find that the problems I have testified to really began 15 years ago and I have never singled out one administration or another for allowing this decline to take place. The decline took place over at least 10 years in fleet numbers, in 15 in the allocation of resources.

Senator NUNN. I know that, but I really think there is a lot of careless talk coming out of this administration along that line, which seems to me to polarize the Congress more and more and will polarize the country more and more if we are not careful.

I do not agree with Mr. Kaufman's analysis. I have heard it and I do not agree with it, but he certainly is not a spokesman for the Carter administration. He was there, as I understand it, under at least three Presidents, two of whom were Republicans.

So, I really think we ought to be more careful about the kind of political analysis we make of the defense budget. I think you would agree that the ships you have out there defending this country under President Reagan were not built under President Reagan. Most were built under the previous Presidents, were they not?

Secretary LEHMAN. No, that is not entirely true, Senator. In fact, the building rate under President Carter was at an all-time low, not equaled since the early budgets of the Laird regime. So, the majority of the ships we have were ships that were spread over administrations going back to FDR.

Senator NUNN. I asked you on March 2 how many ships from the previous administration's shipbuilding program had been delivered during this administration and how many will be delivered in operation that will add to the current fleet ship counter.

Your answer was and I quote:

> Since the 20th of January, 1981, 28 ships appropriated during the previous administration have been delivered to the Navy. Thirty-one ships from that era are still under construction. For the purpose of this response ships contained in fiscal year 1977-80 programs are considered to be from the previous administration.

I do not want to go into this in great detail, but maybe you can submit for the record how many ships the Navy had in its fleet as we said today, that came from the Carter administration, that came from the Ford administration, that came from the Nixon administration, that came from the Johnson administration, and that came from the Reagan administration.

If you can also submit for the record the same question as to what you will have at the end of this President's term. My point is not that we were building enough ships under the previous administration.

My point is that if we keep pitting the Democrats against the Republicans, it will be the country's security that suffers. That is what has been done over and over in the last 2½ years and I must say I am one of those who was a leading critic of not having enough defense funding in the previous administration.

[The information follows:]

SHIPS IN FLEET DURING PREVIOUS AND PRESENT ADMINISTRATIONS

Two years ago the Reagan administration set forth a program intended to recapture maritime superiority for the United States. It was based on a 600-ship Navy, built around 15 carrier battle groups. The Navy and Marine recovery program in pursuit of that objective is now well underway. The program is on course and we are much closer to the achievement of many of our objectives than is generally recognized. With new ship construction, reactivations, major conversions and the build/convert-and-charter program we have more than doubled the shipbuilding rate of the 1970s. Most importantly, our shipbuilding progam is made up of the *right* kind of ships in the right mix. Of the 514 battle force ships in the Navy today, 19 were acquired under President Carter's administration. During the Ford and Nixon administrations, a total of 45 and 56 battle force ships, respectively, were built. Under the Johnson administration, 126 were built while 89 were acquired under the Kennedy administration. A total of 173 ships were acquired by prior administrations.

With the passage of the fiscal year 1983 DOD funding legislation one contract was signed in December 1982 for the construction of two CVN's at Newport News. We are building three to four *Los Angeles* class nuclear attack submarines and at least one Trident submarine per year. The first Aegis cruiser, USS *Ticonderoga* was commissioned in January with a total of 10 currently authorized and 7 already under contract. The fiscal year 1984/88 plan includes 14 more. Long lead funding is requested in the fiscal year 1984 budget for the first of a new class of destroyer, DDG–51, the *Arleigh Burke*. The first of the four *Iowa* class battleships to be reactivated, USS *New Jersey* was commissioned in December. The second, USS *Iowa*, is currently being reactivated and will be delivered to the fleet early in 1984. Long lead funding for the third ship, USS *Missouri*, is in the fiscal year 1984 budget, with the fourth ship, USS *Wisconsin*, to follow one year later. An integral part of our shipbuilding program includes plans for LHD–1s, LSD–41s, LPDs, and LCACs. Our fiscal year 1984–88 program funds 13 amphibious ships. The fiscal year 1984 budget request authorization for the lead ship of the LHD–1 class, the multi-purpose amphibious assault ship with two more planned for fiscal year 1986–88. We are requesting 4 mine countermeasures (MCM) ships in fiscal year 1984 with 8 more planned for fiscal year 1985–88. In fiscal year 1984, we are requesting 3 civil service manned fleet oiler (TAO) with 16 more planned for fiscal year 1985–88. We are expanding our sealift capability with the delivery of four TAKX ships in fiscal year 1984 and the conversion of four more SL–7 ships (TAKRX).

Overall 25 ships were delivered to the Navy during 1982. Twenty ships were a total of 11 months ahead of schedule. Nineteen ships were on or below budget. By the end of President Reagan's first term in office (20 January 1985), 531 battle force ships are projected to be in the fleet with achievement of the 600-ship Navy in 1989.

Senator NUNN. The President said the other night in his speech, we are just getting the M–1 tank, as if it were built under this administration. That started under a previous President. The *Trident* submarine is just going out, he said in his speech. He did not make it clear that program was started under a previous Republican President.

The cruise missiles being deployed right now and aircraft were started under the Carter administration. Defense is a continuous program and it must be bipartisan if we are to have any opportunity whatsoever to enjoy a consensus around here. This consensus that has taken so long to build is eroding very rapidly and I just hope we will all be careful about politicizing it.

REFORM CAUCUS

Senator COHEN. I thank Senator Nunn for his remarks and I add one other thing about the reform caucus. To come back to it for just a moment, because I know it has been somewhat denigrated in military circles, but, General Kelley, I missed your comments about it. I am told you are fairly ecumenical in nature, but I go back 2½ years when Senator Nunn, myself, and Senator Hart called for open hearings on the rapid deployment force.

You may recall the kind of controversy that stirred at that time. There was quite adamant opposition to it. What is striking is just a week ago we had hearings in this Senate subcommittee in which those in charge of the rapid deployment force thanked the members of this committee and those who served on the military reform caucus for insisting on a separate, unified command for the southwest Asian region of the rapid deployment forces responsibility.

So, it has been a bipartisan effort to try to examine concepts we were told previously were none of our business. We were told that you authorize and appropriate the money for the equipment and pay and leave the strategy and policy to us.

Command and control is none of your business and because some of us felt that command and control determines the size and shape of the force capability, we felt we did need to know.

I just point it out because I think what Senator Nunn is saying is exactly correct. If we are going to have Republicans versus Democrats in this Congress, we will lose the battle because we will lose the other House and we might barely squeak by in the Senate, but I doubt it.

That is one of the reasons why I think those of us on this committee who have tried hard to have a bipartisan approach, whether it is the Nunn-Warner, the Jackson-Warner, or the Cohen-Nunn, we have always tried to stick together because we need the consensus and if we do not have it in this committee, you certainly will not have it in the country.

AIRCRAFT CARRIER AFFORDABILITY

So, I join with Senator Nunn for what he is suggesting. One other question before I yield to Senator Nunn and that is what I started to ask before. That is the question that has been raised about the necessity and desirability and affordability of the two aircraft carriers.

The question was asked at one of our prior hearings as to the costs involved in canceling out those two ships.

Mr. Secretary, you indicated it would cost more to cancel than to build them. That has become a subject of controversy. Perhaps you might be in a position to give us some numbers of exactly what you were talking about in terms of the cost involved, in terms of canceling that liability to shipbuilders legal costs, et cetera.

Secretary **Lehman**. Yes, we were working on that 2-ship procurement for nearly 2 years before the appropriation finally went through in December. As a result, the prime contractor, Newport News, at our urging, had already negotiated most of his subcontracts and his basic materials and had invested his own money in protecting longlead positions for much of that material.

We were therefore prepared to move rapidly to implement that since it had been so thoroughly scrubbed for 2 years by every committee of oversight and debated on the floor of both houses and in the committees.

We signed the contract on the 29th of December and since that time, over 600 subcontracts have been executed and the total obligation as of right now, is more than $1.4 billion just in the Government-furnished equipment contracts, quite apart from the contractor-furnished equipment subs.

Over 12,000 tons of steel have already been received and fabrication and assembly is already underway. We have already approved or committed $960 million to the two major prime nuclear component contractors. The shipbuilder reports that so far, his subs have been committed $550 million already under subcontract.

So, my estimate remains, that including the cancellation fees, the current obligations we already have, and material received, and the legitimate claims that will be entered against the Government for this cancellation and breach of contract the cost of cancellation will amount to more than the price of one of the carriers under this multiyear deal.

We will be submitting to you by tomorrow a more extensive breakdown, including the loss of the jobs and some 40 States are affected by it. The fact is that it will be very cost ineffective to cancel the second carrier or to cancel both of them and the outlay stream for the next 3 years will be considerably greater for a cancellation than if we proceed on the current course.

Senator COHEN. Senator Nunn?

Senator NUNN. Just a couple of questions.

REACHING A 600-SHIP NAVY

Admiral Small, when the Navy reaches its goal, will the Navy have the capability to, and I quote from the policy statement as to the goal of the policy statement, "meet the demands of a worldwide war including concurrent reinforcement of Europe, deployments to southwest Asia and the Pacific, and support for other areas."

Admiral SMALL. Yes, sir, I believe the answer to that question is "Yes." The 600-ship Navy is really a representation of a balanced and capable force that is necessary to perform a variety of tasks.

I know that you know, Senator, that the planning force which the JCS works with, based on a scenario agreed to by the administration, and the strategy which represents the national interest, in terms of priorities and objectives, requires a much larger force to accomplish those missions with what I would call, prudent risk in a timely fashion.

For a war termination strategy of global proportions, we believe the 600-ship Navy with its 15-carrier battle groups represents a minimum force to execute that strategy sequentially over a greater period of time with higher risks.

In fact, you can make the case that 600 ships and 15 battle groups is almost that necessary, if not less than that necessary, to support our normal peacetime forward deployment posture right now.

Senator NUNN. It sounds like me. You start off saying yes and end up saying no.

Admiral SMALL. No; I am saying we believe that 600 ships with 15 battle groups is a pragmatically achievable force which, if used wisely, and I am sure it will be, and in a sequential fashion, can support our national strategy.

AMPHIBIOUS SHIPPING PROGRAM

Senator **Nunn**. General Kelley, you and I and this committee have had several hours of testimony about amphibious shipping. I have not studied the budget in great detail on this point, but my impression is that the Marine amphibious shipping program, the program to support Marine amphibious capabilities has been diminished in the last year or two.

Is that correct or is the program still the same as it was 1 year ago and 2 years ago?

General **Kelley**. I would have to go back into some specificity. Let me say this. The Marine Corps at this juncture, working in close cooperation with the Navy, is very satisfied that the amphibious shipbuilding that we see currently in the 5-year SCN plan and in the extended planning annex—if that reaches reality, that amphibious shipbuilding program will support the administration's objectives of a simultaneous lift of the assault echelons of a Marine amphibious force and a Marine amphibious brigade.

Senator **Nunn**. I will probably follow up with a couple of specifics for the record on that.

Mr. Secretary, I have just seen this article dated last week. April 1, Washington Post—Navy gets into war with the university. The university president is quoted as saying we are all in favor of a strong U.S. Navy, Sprule said in an interview, but this is fundamental. The issues of the responsibility and authority go to the same place. When the Navy contracts with Boeing, it does not tell Boeing who their president should be. If the president of CNA is designated by the Secretary of the Navy, that will influence the staff and how you get credibility with those analyses when they go to Congress or the Secretary of Defense.

In his letter, the university head warned that the Navy's action poses a dangerous precedent for other FCRC's. The credibility of unbiased work will be destroyed and he said the university is not willing to continue as the CNA contractor under these arrangements.

I do not know the details and I have not heard the other side of it, but I do believe, from a congressional point of view, that it is enormously important to be able to go to CNA or Rand or some other organization and know it is not wired to come up with a party line.

I happen to think a great deal of Bing West as an individual, so it has nothing to do with that. But is this allegation by the president of CNA accurate and if so, what is your own position on that?

Secretary **Lehman**. Senator, I think the position that is ascribed to the President of Rochester is probably badly reported. I have never made any demands on him or the university. I think what his understandable dismay is about is that an independent report done last year for the incoming Chief of Naval Operations was very critical of the quality of the work done by one part of CNA and recommended changes in procedures and management. Under the contract, we have an understandable interest in oversight of the quality of the management.

We do not seek to dictate personnel to the contractor, but I think you can see here a problem that runs throughout our R&D procurement program—that sole source relationships tend to give decreasing attention to management efficiency and quality.

So, while the report was very critical, we do not intend to drop CNA or to cancel the contract. What we are going to do is to compete the management of CNA; and we are confident and hopeful that the University of Rochester will enter that competition. But I just do not like sole source procurements, whether they are for studies and analyses or airplanes.

You can be sure that in the competition that is done for all of our studies and analyses, insist on integrity and independence and quality of personnel. So, you need not fear there will be any imposition of a party line on our research and analysis contractors.

Senator NUNN. Would I be correct in assuming that this story, or the implication of the story, is not correct when it says that Secretary Lehman desires to have Mr. Francis J. West, Jr. replace Mr. David P. Cassidy as president of CNA within a few months." Is that incorrect?

Secretary LEHMAN. It is not sufficient. What is correct is that the Chief of Naval Operations recommended, through the contracting officer, that they take another look at the leadership of CNA and that they do a search for a new president, that the Navy was not satisfied with the quality of work being done there by parts of CNA and it was time for a change.

Senator NUNN. That came from the Chief of Naval Operations or the study?

Secretary LEHMAN. The study recommended to the Chief of Naval Operations that changes be made.

Senator NUNN. And that was passed on to the president?

Secretary LEHMAN. That was passed on from Admiral Trost, the contracting officer to the university.

Senator NUNN. By orders of you or orders of CNO?

Secretary LEHMAN. Of course, I operate according to the prescription in USC–10, which is that the Chief of Naval Operations operates the Navy under my oversight.

Senator NUNN. I am just trying to get the point of whether it was the CNO who wanted this to take place or you?

Secretary LEHMAN. We all agreed. First of all, the CNA supports the analysis done in OPNAV primarily and the contracting officer is Admiral Trost, who reports to the Chief of Naval Operations. But Admiral Watkins and I and all of the senior leadership in the Navy do not act in isolation one from the other and we all agree it is time for a change at CNA.

Senator NUNN. The next question is, have you all recommended who the person to take the current president's place should be?

Secretary LEHMAN. We urged them to take a look at Bing West and consider him because he had the academic credentials and the background as a professor at the Naval War College and the experience as an Assistant Secretary of Defense to be uniquely qualified.

Senator NUNN. Did you give them any other names or just that one?

Secretary LEHMAN. Just that one.

Senator NUNN. Isn't that sole source? [Laughter.]

Secretary LEHMAN. Under the regulations of the university, they are not obligated to consider only our suggestions. They are obligated to provide someone acceptable to us and we are perfectly willing to look at other candidates than Bing West. We never said we would exclude consideration of other candidates.

Senator NUNN. Well, it sounds like to me the story is pretty accurate, then, wouldn't you say? In what respect is it not accurate?

Secretary LEHMAN. I would have to look at the article. I have not read it lately.

Senator NUNN. Maybe you could furnish for the record, if you would, in what respects the story is not accurate or not adequate.

Secretary LEHMAN. Sure.

[The information follows:]

CENTER FOR NAVAL ANALYSES

It is regrettable that any misunderstanding has arisen on the future of the Center for Naval Analyses. We all agree that this institution, like other organizations of its type, can only function in an atmosphere that respects the spirit and the letter of academic freedom.

In this regard the Department of the Navy has been reviewing its entire studies and analysis program in order to more realistically identify its future analytical support requirements and I am confident CNA will continue to play an important role in meeting these requirements.

However, the Navy believes that its requirements can and indeed must be met at reduced fiscal outlay, if at all possible. The Navy also believes that new and innovative management, within the Navy and in CNA, will be the key to meeting our goals. With these factors in mind, and in view of expressions of interest in operating CNA for the Navy by several qualified institutions, possibly at a net reduction in cost to the Navy, it may be prudent to open the contract for operation of CNA subsequent to 30 September 1983 to competitive bidding. The University of Rochester (the present contractor) could of course compete.

I believe this approach will result in a more productive and responsive organization. It is part of our continuing effort to periodically examine our programs to increase efficiency and reduce costs.

Admiral SMALL. I would like to make a statement.

Senator NUNN. I do not care who the president is, but I do want it to be an independent choice. I think the way it has always been done with any of these is they make the choice subject to your approval, not you make a choice subject to their approval. There is a key difference in the two. Do you agree they should make the choice subject to your approval?

Secretary LEHMAN. I think that is a very good way to proceed, but I also think that when we let them know that we are dissatisfied with the quality of their work and leadership, that they should undertake a search, which they refused to do. So, I just think they are entirely destroying the lawyer-client relationship of confidence in the way they are proceeding.

Senator NUNN. Admiral Small, I think I interrupted you.

Admiral SMALL. You said, I think, what I was going to say, Senator Nunn. Efforts to upgrade the quality of analysis have been taken initially several years ago starting down in the fleets.

As you know, there is an operational evaluation group actually at sea as a part of the CNA, working with the fleet commander's battle group level ships, and so forth, plus a technical analysis group, also spread around the world, analyzing data from naval exercises and tests.

It is a very complex organization for a federally chartered research center. It does have autonomy, and we all agree with that. However, significant change is required and significant change has been made, but there is still a long way to go. I think that those of us in uniform have felt that revitalized leadership there is the essence of what needs to be done.

Senator NUNN. Do you think the Navy should make those choices as to who the leadership will be?

Admiral SMALL. No, sir. I think that is the responsibility of the charter.

Senator NUNN. And you agree with keeping the charter that way?

Admiral SMALL. Yes, sir. But I do not think that denies us the opportunity to nominate candidates for that position.

Senator NUNN. If the person who controls the purse makes a recommendation that one person be fired and who will next be fired, it looks like to me he might as well put it in the Navy Department and not call it independent.

If you want to do it in-house, then do it in-house. I do not know whether you ought to do as much as you do outside, but if you want independence, do not pretend you have it if you cannot say we are not satisfied with your work, on one hand, which is perfectly legitimate—and second, we are not satisfied with your leadership, on the other hand. That gets closer. But the third thing is we want so-and-so to be in there.

Now if you do that, you might as well fold your tent. Do not call it independent. Do not pretend it is. They may still have good work, you know, but do not pretend it is something Congress can go to and say look, the Navy said this—what is your analysis?—because that is what we do with these.

I have gone to the Rand Corp. many times, and if the Air Force starts picking the Rand Corp., I will not go back out to California, I will just go to the Air Force. I will not ask them anything.

I think there are a lot of other people who feel that way, including some in uniform in the service, but, I won't belabor it.

It seems to me the story, based upon what I have heard here this morning, is accurate and there is even a part at the end of the story that rumors about political background of some people hired by the CNA in the past 2 years, particularly two officials who had worked for the Carter administration, reference to Robin Perry, a Naval Academy graduate and Bernard Roscar, a former Rand economist. If that is accurate, that smacks of pure partisan politics, as far as I am concerned.

Secretary LEHMAN. It sounds like paranoia on the part of whoever leaked that story, rather than politics.

Senator NUNN. Most stories that are leaked start from paranoia. There is nothing unique about that. The question is, you are not paranoid if they are really after you. [Laughter.]

Senator COHEN. General Kelley, I may have to call on you later this afternoon. I have just been advised there are three people in Gorum, Maine who have taken over a TV station and they are playing Wayne Newton records until Jim Watt apologizes and I must adjourn the meeting shortly to go resolve the dispute.

Senator **Nunn**. I would submit that story stems from paranoia, too. [Laughter.]

CONSOLIDATING MILITARY TRAFFIC MANAGEMENT COMMAND

Senator **Cohen**. Mr. Secretary, let me ask you one final question. Last year the Department of Defense proposed to consolidate the Navy's military sealift and the Army's military traffic management command into a new command—a military transportation command. We know some in the Navy have had reservations, if not outright objections, to this.

In fact, Congress passed a prohibition in the 1984 authorization that would allow that consolidation. So, I have two questions.

No. 1, do you think the congressional prohibition is appropriate? No. 2, do you approve the consolidation of the two?

Secretary **Lehman**. I do not think any change in the legislation is necessary to carry out the efficiencies that we need to do in coordinating all of the military transportation, including the military airlift command. I think we are well along to achieving a new structure for common booking for surface sea and air transportation under the JDA and to achieve the efficiencies, that can be done by better application of computer interfaces on booking functions without taking away the sealift from the Navy or the airlift from the Air Forces and creating yet another nonaccountable bureaucracy under the guise of joint reform. So, I do not think any change is needed in the legislation, but I think we are well along to achieving the kinds of reform of the way of doing business that can achieve savings.

Senator **Cohen**. Thank you very much. I will submit additional questions for the record.

[The questions, with answers supplied follow:]

Questions Submitted by Senator William S. Cohen

DDG-51

Senator **Cohen**. Why must the first ship of this class be authorized next year, in the fiscal year 1985 budget?

Admiral **Small**. Within the surface combatant force level, the most serious problem facing the Navy is the replacement of guided missile ships which are scheduled to retire by the early 1990's. The production profile has been developed so that serial production can keep pace with projected retirements. For this reason, authorization of the DDG-51 in fiscal year 1985 becomes critical since the ship will not be war ready until early 1990. Slipping DDG-51 will mean (1) delaying the replacement of retiring destroyers and increasing the risk that existing DDG's will be able to counter the threat of the early 1990's and (2) increasing the cost both for constructing DDG-51's and further extending the life of the older ships.

Senator **Cohen**. Please provide, in detail, a cost comparison of the DDG-51 and the CG-47 in constant dollars. Describe how these costs were derived. It appears in this year's 5-year plan that the DDG-51 is roughly the same price as the CG-47.

Admiral **Small**. DDG-51's do not cost as much as CG-47's. The first DDG in 1985 is more expensive than the CGs in the same year because the costs customarily associated with a lead ship (production start-up, training equipments, initial designs, increased testing, lack of learning among others) are included. However, the current average follow ship costs in fiscal year 1983 dollars for each class compare as follows:

	Million
CG	$1,091
DDG	774

Since this comparison was derived in support of the fiscal year 1984 budget submission the Secretary of the Navy has established a cost target for the DDG-51 of $700 million in fiscal year 1983 dollars as an average cost of the sixth through tenth hulls. Design is continuing and this price is within range of that target.

Senator COHEN. We have been told that the cost of the DDG-51 rose considerably over the past year, but that through the imposition of stringent cost control measures, those costs were reduced and the ship's combat capability was maintained at the same level. How was that done? Please provide a listing of every system that was removed from the design and list the remaining applicable "margin" buy percent (e.g. electrical margin, displacement margin, etc.).

Admiral SMALL. Throughout the past year, the average follow ship cost has not increased. There was, in fact, a steady reduction. The Navy recognizes its responsibility to deliver capable, yet affordable ships. In reviewing the design over the past year, we concentrated on making DDG-51 capable and affordable. Intensive top level reviews concentrated on combat system, machinery and hull designs. In each area, revisions, were made without significantly affecting the major war-fighting capabilities of the ship. Examples of areas impacted include:

Combat Systems: LAMPS MK III electronics design budgeted, vice installed.

Machinery: Controllable reversable pitch propellers, like CG-47, vice reverse reduction gear and fixed pitch propellers.

Hull: Slight decrease in beam.

Margins have remained approximately the same at:

Light ship displacement—8.5 percent.

Electrical power—20 percent.

Senator COHEN. Explain the block obsolescence problems which the Navy expects to encounter during the 1990s with DDG 2 or DDG 37 class ships.

Admiral SMALL. The ten DDG 37 class ships were first authorized in 1956 and commissioned between 1959 and 1961. The twenty-three DDG 2 class ships were first authorized in 1957 and commissioned between 1960 and 1964. Based on a nominal 30 year service life, all of these ships will retire in the early 1990s. The goal of 15 CVBGs requires 100 AAW capable battle group combatants (cruisers and guided missile destroyers) in support. The loss of one-third of these ships in the early 1990s must be addressed now by authorization of the DDG 51 in the fiscal year 1985 budget.

Senator COHEN. Why is it not possible to extend the life of the DDG 2 class ships?

Admiral SMALL. The DDG 2 class has the least potential for modernization and improved combat capability of all DD/DDG classes which will be in commission through the remainder of this decade. These ships were proposed for mid-life modernization starting in fiscal year 1980, but due to cost and required battle group warfighting capability, the modernization program was limited to three ships. It is felt that construction of the vastly more capable DDG 51 class is a much better use of limited resources than performing modest modernization of a class which is rapidly approaching the end of its 30-year service life.

BATTLESHIP

Senator COHEN. Mr. Secretary, the fiscal year 1984 budget includes advance procurement funds for reactivation and modernization of the third battleship, the *Missouri*. What will be the total cost of this reactivation in constant dollars?

Secretary LEHMAN. The total cost of the reactivation of the third battleship is $443 million in fiscal year 1983 constant dollars.

Senator COHEN. Why does the Navy want to reactivate this ship?

Secretary LEHMAN. The impetus for reactivating the *Iowa* class battleships lies in providing near-term relief for over-extended carrier forces, augmenting the offensive punch of the Fleet through the considerable strike and anti-surface ship assets of the modernized battleship, and gaining additional operational flexibility through the employment of Surface Action Groups in some areas of lesser threat. During a period of rising tensions or at the outbreak of hostilities, the unique warfighting capabilities and large, high speed cruising radius of the battleship permit its employment in a surge or rapid reinforcement role to the area of crisis.

Senator COHEN. Which ship, *Wisconsin* or *Missouri*, would be reactivated first, and where would this take place?

Secretary LEHMAN. It is currently planned that the third reactivation will be *Missouri* and that the reactivation would occur at Long Beach Naval Shipyard.

Senator COHEN. How would you describe the condition of these ships?

Secretary LEHMAN. In 1977, the Board of Inspection and Survey found all four of the *Iowa* class battleships conditionally fit for further service. The hull shells, machinery and armament equipments were adjudged sound. In many areas such as medical, dental, food service, laundry, navigation, communications, radar and electronic warfare, the equipments are obsolete, missing or in need of extensive repair and should be replaced. Firefighting protection systems are outdated and do not meet current specifications. Electrical cabling, particularly in the engineering spaces, showed signs of deterioration. The ships do not meet present habitability and sanitation standards and have not been converted to distillate fuel. The areas have been included in the upgrade and repair program.

Senator COHEN. What modifications will be made?

Secretary LEHMAN. The modernization package includes:

(*a*) Eight armored box launchers for the Tomahawk cruise missile system (32 missiles).

(*b*) Four quad canister launchers for the Harpoon cruise missile system (16 missiles).

(*c*) Four Vulcan Phalanx close-in weapons systems.

(*d*) State-of-the-art air and surface search radars.

(*e*) State-of-the-art electronic warfare equipment.

(*f*) Modern cruiser communications package.

(*g*) Upgrade helicopter facility for all weather, day/night operations with one operating and three parking spots.

(*h*) Conversion to distillate fuel.

(*i*) Three zone sewage collection, holding and transfer system.

(*j*) Improved firefighting systems.

(*k*) Modest habitability improvement.

Senator COHEN. Why would you want to reactivate these ships instead of building a new ship, such as a frigate, destroyer, or cruiser?

Secretary LEHMAN. A near-term partial solution to the overextended commitments of the Navy was sought. The four battleships were readily available, could be returned to the Fleet in less than two years and would be relatively inexpensive—about the cost of a modern frigate. Further, the Navy obtains a highly survivable platform which, after modernization, provides a most capable strike and anti-ship surface combatant. Any new ship building effort, commenced at the time the battleship reactivation was started, would not have placed an asset in the Fleet until the late 1980's, at a cost far surpassing that of the battleship, without providing the same level of survivability or endurance.

Senator COHEN. Why are the 16-inch guns important for supporting Marine amphibious operations?

Secretary LEHMAN. The Navy's primary fire support weapon for amphibious operations is the 5-inch gun installed on destroyers and frigates. The introduction of the battleship's 16-inch guns provides a gunfire support range and lethality not currently available nor anticipated in the near future. In comparing the capabilities of the battleship's 16-inch guns to a modern destroyer's 5-inch guns for a thirty minute fire support mission, the battleship would be able to place 803 tons of ordnance on the target as opposed to 42 tons for the destroyer. After that mission, the battleship could repeat the mission while the destroyer would have expended all of her ammunition. To deliver the equivalent gunfire payload of one battleship during this 30-minute period would require approximately 19 destroyer types, albeit at a significantly reduced range and destructive capability.

Senator COHEN. Describe the availability and cost of the 16-inch rounds for this ship.

Secretary LEHMAN. The current inventory of 16-inch ammunition is as follows:

Full service charges	$12,222
Reduced service charges	15,667
HC projectiles	15,427
AP projectiles	3,815
BL&P projectiles	2,500

The cost of this ammunition is based on fiscal year 1988 dollars which is the first year of new ammunition production.

Full service charge	$1,318
HC projectiles	6,421
BL&P projectiles	4,632

Senator COHEN. How would you describe the survivability features of the ship?

Secretary LEHMAN. The battleship is the most survivable surface combatant in the world today. The all-steel construction, including armor plate of up to 17 inches, the redundancy of systems, compartmentation, torpedo side protection system and inherent shock hardness required by the 16-inch guns equip this ship with the ability to absorb the effects of the most modern anti-ship weapons, and yet be able to continue performing its mission. The addition of the Vulcan Phalanx Close-In Weapons System provides the battleship enhanced self-protection against anti-ship missiles.

Senator **Cohen**. What are the manning requirements for this ship?

Secretary **Lehman**. The battleship manning complement is 68 officers and 1,470 enlisted.

Senator **Cohen**. What difficulties will you encounter in manning this ship?

Secretary **Lehman**. There are no difficulties foreseen in manning this ship.

Senator **Cohen**. Two battleships have already been approved for reactivation. Why should we reactivate a third one?

Secretary **Lehman**. The currently authorized battleships will significantly contribute towards the easement of the Navy's over-extended forces. However, to reap the full benefits of the war-fighting advantages the battleships provide, as well as to accommodate a practical rotational cycle for these ships, reactivation of all four is preferred. This would realistically have one ship, and often two, in a forward deployed area at all times. Response to crisis contingencies would be enhanced as well as the impact in a presence role the battleship would engender.

Senator **Cohen**. What is the expected remaining service life of the battleship?

Secretary **Lehman**. The modernized battleship is expected to serve for at least 15 years, and may well exceed 30 more years.

Senator **Cohen**. What will be the ownership costs of this ship?

Secretary **Lehman**. In fiscal year 1983 dollars, the battleship ownership costs are anticipated to be $48.9 million a year. Further broken down, the operating costs are $11.7 million and the manpower costs are $27.2 million.

CG-47

Senator **Cohen**. Admiral Small, what equipment on the CG-47 class cruisers funded in fiscal year 1983 was eliminated or downgraded as a result of the failure to receive full appropriations?

Admiral **Small**. Funding was denied for the SPS-49 radar and Lamps MK III shipboard electronics. The Navy has stressed the importance of these equipments in rounding out CG 47's combat capability; however, the equipments were not appropriated in fiscal year 1983.

Senator **Cohen**. Was this equipment provided on cruisers funded in prior years?

Admiral **Small**. Yes. SPS-49 is in all CG-47's appropriated prior to 1983 (CG's 47 through 53). Lamps MK III electronics are in CG's 49 through 53. Both are excluded in CG's 54, 55, 56 in fiscal year 1983.

Senator **Cohen**. What is the operational significance of the failure to provide this equipment on the cruisers funded in fiscal year 1983?

Admiral **Small**. First, loss of SPS 49 Radar:

The SPS 49 Radar is part of the highly interactive, multimission Aegis Combat System. The combat system elements were identified from experience in developing requirements of surface combatants to defend and support battle forces. The makeup of this combat system was planned and debated throughout the middle 1970's and has been in engineering development and test since then. There are tactical, operational and engineering reasons for having the SPS-49 radar in the Aegis Combat System. Opposition to installation of the radars has come from members of the GAO whose views have received extraordinary public attention. The basis for their views is that the radar is duplicative of function and unnecessary.

In summary: The removal of the SPS 49 radar results in:

Decreased electronic deception capabilities;

Decreased resistance to electronic jamming;

Loss of flexibility in long range air surveillance;

Decreased auxiliary support for Battle Group offensive air operations.

Second, loss of Lamps MK III electronics:

The Navy is convinced that multiple ASW weapon systems are required in CG 47 class cruisers. This includes the SQR-19 towed sonar, SQQ-28 Lamps electronics, SQS-53 hull sonar and the Lamps MK III. This combination offers the ASW capability required to support Carrier Battle Groups and Surface Action Groups. Without LAMPS MK III electronics in CG 47, the following capabilities are degraded:

—the ability to communicate sonabuoy data between the ship and any Lamps MK III of the force.

The inability to integrate towed array information and Lamps MK III acoustic information into an effective long range, classification, localization and standoff attack process—as recently proven in USS *Moosbrugger* (DD 980) during operational test evaluation—force coordination and the ability to deal effectively with simultaneous air, surface, and underwater contacts.

Senator **Cohen**. What would be the cost in fiscal year 1984 dollars of restoring this equipment?

Admiral **Small**. Approximately $27M if restored now and installed during construction. Should funding come later, these equipments would have to be back-fit, which could cost significantly more depending on the year of backfit.

SHIP LEASING

Senator **Cohen**. Mr. Secretary, the TAKX maritime prepositioned ship program became the subject of considerable controversy recently when it was asserted that this type of leasing arrangement was costing the government more money than a simple procurement of these ships would.

What is the direct cost of this contract arrangement?

Secretary **Lehman**. The allegations that the TAKX Maritime Prepositioning Ship Charter Program costs more than a direct Government purchase stem from a report prepared by the Staff of the Joint Committee on Taxation dated February 25, 1983. The Staff utilized a pre-tax methodology in their analysis that did not consider all tax inflows to the Treasury and, therefore, did not present a complete picture of the costs and benefits to the Government. The staff's analysis differed from the analysis by the Navy's financial advisor which took these additional costs and benefits into account. For an average per ship cost of $184.01 million, the cost to the Navy on a present value basis (e.g. the capital charter hire) is $148.80 million, and the savings is $35.2 million per ship.

The results of the two studies differ by $50.1 million present value per ship, based on a specific ship cost of $182.4 million. The analysis concludes that leasing is $28.6 million less expensive than purchase for the Government as a whole (this conclusion is comparable to the results shown in other Navy studies). The committee staff asserts, to the contrary, that leasing will cost $20.8 million more than purchase.

The Navy has analyzed the two studies and the difference is attributable to the following factors:

	Millions
Methodology	$39.4
Residual value	5.1
Cost assumptions	4.2
Rounding and discounting	0.7

Methodology

The largest factor is the methodology difference. Navy analysis includes $39.4 million in tax revenues, or "reflows," to the Treasury that will result from interest income received by the lenders in the lease transaction. The analysis assumes that if the Navy purchased the ship it would be for cash.

The committee staff would not count these reflows, on the theory that equivalent reflows would occur from interest paid on the Treasury debt used to finance a Navy purchase; i.e., that a purchase would be 100 percent deficit financing, rather than cash. On this theory, the committee staff charges the Navy with "doublecounting."

If, however, this deficit financing assumption were to reflect the forecasted Federal deficit for the relevant years, (i.e., approximatley 80 percent of the budget deriving from tax revenues and 20 percent from Treasury financing), the result, calculated by Navy, would be a cost saving of $14.5 million using the lease approach.

Even if the committee staff's 100 percent deficit assumption were used, however, their result is based on another assumption that is inconsistent with the Navy analysis. The staff assumes that lenders in the lease transaction and buyers of Treasury bonds in the purchase transaction would both pay taxes on their interest income at the same effective tax rate. That appears to be an oversimplification. Treasury Department statistics show that a substantial proportion of Treasury bond sales are to pension funds and foreign government entities, neither of which pay taxes and generate Treasury revenues from interest income. By comparison, the lenders in a leveraged lease transaction, on average, are considerably more likely to be taxpaying entities. This fact would reduce the differential claimed by the committee staff, even granting its 100 percent deficit scenario, and in more cases would reverse the staff's conclusion.

One further assumption used in the committee staff methodology, without explanation, is that the interest paid on the Treasury debt in the purchase transaction would always be equal to the discount rate used to derive all of the present values in the analysis. If, however, the analysis is done using actual interest rates (i.e., the 12 percent Treasury bond rate that existed at the time of the Navy Study), and using a discount rate of 10 percent as specified by OMB for Government cost analyses, the purchase would have a present value cost of $215.7 million, making the lease transaction less expensive by $6.3 million.

Residual value

In addition to the differences attributable to methodology, two other substantive gaps exist between the two studies. First, the committee staff includes a residual value of $5.1 million, in present value after-tax cost. This assumes that each ship will, at the end of the 25 year lease, have a remaining value of $108.9 million—almost 60 percent of its original cost. The Navy assumed that any estimate of value at that distant point is entirely speculative. If, however, one assumed a possible 20 percent residual, the present value after-tax cost would be $1.7 million, not the committee's $5.1 million.

Cost assumptions

Finally, the committee staff assumed that all of the transaction costs associated with the lease transaction would disappear if a purchase were employed. The Navy study considered that these costs would not be significantly different, since most of the costs attributable to the construction period under a lease would likewise be present in a purchase and, while in a purchase, there would be some diminution of the permanent financing fees, these would be more than offset by the value of the cost overrun and other risks that would be shifted to the Government in a purchase transaction.

Rounding and discounting

Attempts to reproduce the committee staff's numbers were unsuccessful due apparently to differences in rounding and discounting techniques; the magnitude of this differential is $0.7 million.

Senator COHEN. What is the indirect cost to the Treasury due to the tax arrangements of this contract?

Secretary LEHMAN. The average net cost to the Treasury on a present value basis is $21.4 million.

Senator COHEN. What would be the comparable costs of buying these ships through the SCN account and operating them in the Navy? What is the net cost to the government?

Secretary LEHMAN. Our estimates indicate that an identical TAKX capability purchased through the SCN account at a pace of one to three per year would result in a program costing over $450 million more for the ship construction cost than this more intensely competitive program. Another cost would have been the loss of three shipyards from the mobilization base. Additionally, instead of program acceleration of 18 months, slippage would have been likely. The operating cost would be the same in either case because union crews would be utilized.

Senator COHEN. Are there any other comments you would like to make regarding the contracts in this program?

Secretary LEHMAN. The contracts have been structured to insure that the vast majority of tax benefits available to private investors in any leasing transaction are passed through to the Government in the form of reduced charter hire payments to the Navy. As a realistic and practical matter, there is no additional cost to the Government as a result of chartering since, if the Navy were to purchase the ships, the private investors would simply invest in other transactions and achieve the same tax benefits without passing any of the savings through to the Federal Government. The Navy, Department of Defense, and Office of Management and Budget believe that chartering the TAKX ships is a sound and economical method to obtain these vital ocean transportation services.

TOMAHAWK CRUISE MISSILE

Senator COHEN. Mr. Secretary, the Tomahawk cruise missile program has become the subject of increased scrutiny because the cost of the anti-ship missile version has suffered significant cost growth. Would you quantify this cost growth problem? Why did this cost growth occur?

Secretary LEHMAN. There has been a procurement unit cost increase in the fiscal year 1983 sea launched cruise missile program. During the last year, the Tomahawk program has undergone intense scrutiny to identify and resolve technical, managerial, and financial problems that were being experienced with the program. As a result of this review, funding shortfalls were discovered and the need to restructure the program was determined. Faced with fiscal year 1983 shortfalls in the procurement appropriations amounting to $83.1 million and another $39.4 million in research and development, and technical difficulties with the conventional land attack variant, it was determined that a reduction in the fiscal year 1983 missile buy would free funds as a partial offset for the program shortfalls. The growth in fiscal year 1983 program cost results from a reduction in the number of fiscal year 1983 missiles from the 120 originally requested in the fiscal year 1983 President's budget.

Senator Cohen. Why do you think this cost growth is under control?

Secretary Lehman. Beginning in fiscal year 1984 the *Tomahawk* program will procure missiles from competitive second sources. This is expected to control missile cost to budgeted levels throughout the remainder of the program. In addition, the correction of deficiencies is aimed at producing missiles in the most efficient manner possible, thereby controlling costs.

Senator Cohen. Who is going to pay for the cost growth which has already occurred?

Secretary Lehman. It is the Government's intent to fairly and equitably exercise its contract rights to ensure that the contractor bears the appropriate share of increased costs. The procedures involve:

Requiring the contractor to share in costs incurred which exceed the target cost under fixed price incentive contracts.

Requiring the contractor to bear 100 percent of all costs incurred which exceed contract ceiling amount.

Auditing and reviewing all costs incurred under the GD/C contracts by the Defense Contract Audit Agency and the Defense Contract Administration Service to determine the allowability, allocation and reasonableness.

Reducing fee or target price under inspection provisions in contracts to compensate for delivery of nonconforming supplies.

Finding of nonresponsibility or causing loss of other contract competitions due to the evidence of unsatisfactory performance.

Restructuring the entire program in the near term, reducing the contractor's production base. This has the immediate impact on the contractor of affecting his competitiveness on other programs and his future ability to compete on the cruise missile program under dual sourcing.

MERCHANT MARINE

Senator Cohen. Mr. Secretary, what action has the Navy taken to support the U.S. Merchant Marine in policymaking councils of the government such as the Department of Transportation, which, although outside the Department of Defense, make important decisions affecting the Merchant Marine?

Secretary Lehman. The U.S. Merchant Marine fundamentally exists as an instrument of the foreign and domestic commerce of the United States, but it must also be capable of serving as a naval and military auxiliary when called upon to do so.

The Navy has supported a sound, progressive national maritime policy and a strong, viable Merchant Marine. We have worked on Interagency Working Groups with the Department of Transportation and other agencies to heighten the awareness of the important roles we expect our Merchant Marine to play and the difficult position in which it finds itself today. We have actively supported appropriate beneficial maritime initiatives; suggested additional ideas; and revisited those proposals which would be inimical to the industry. Specifically, Navy has supported recent legislative initiatives that would revitalize and expand our Merchant Marine, and provide an opportunity for U.S. operators to compete more favorably in the carriage of goods by sea. This has included support of the major provisions of the Maritime Act of 1981; the Title XI Ship Financing Guarantee initiative and the need to expand this program to provide work for the U.S. shipbuilding industry; proposed amendments to the Merchant Marine Act of 1936 that will benefit the U.S. Merchant Marine and be consistent with our national defense requirements.

NAVY/AIR FORCE COOPERATION

Senator Cohen. Mr. Secretary, what is the degree of cooperation between the Navy and the Air Force in using aircraft to fulfill vital maritime missions?

Secretary Lehman. Inter-service cooperation between the Navy and the Air Force has never been greater than it is today. Last fall Secretary Orr and I, with CNO and the Chief of Staff Air Force, signed an agreement to accelerate our cooperative efforts to improve the Air Force's capability to provide support for maritime operations. We are fulfilling that commitment in both spirit and substance.

The focus of our agreement was on joint training and exercising, and our agreed mission priorities were anti-air warfare, aerial minelaying and anti-surface ship operations in that order. Since our agreements every exercise has included significant U.S. Air Force participation. Furthermore, our most recent exercises, READEX in the Atlantic Fleet and FLEETEX in the Pacific Fleet, are absolute milestones for Navy/Air Force interservice cooperation. The level and scope of Air Force participation in FLEETEX 83-1 is unparalleled, with extensive inter-service and inter-command involvement in planning, execution and analysis of multiple roles and missions.

Senator **Cohen**. Is there room for increased cooperation between the Navy and the Air Force in using land-based aircraft for protecting or attacking ships at sea in time of emergency?

Secretary **Lehman**. Our much increased level of Air Force participation in naval exercises is aimed not only at exposing more operating forces to joint operations at sea, but also at identifying strengths and weaknesses. The Navy and Air Force Departments are committed to providing operational commanders the most flexible and capable forces possible. We are working closely to identify and fulfill requirements, in priority of need. The global maritime security requirements of the United States demand a total force approach. We continue to capitalize on every opportunity to increase cooperation between the Navy and the Air Force regarding joint operations at sea.

LIGHT ARMORED VEHICLES (LAV)

Senator **Cohen**. General Kelley, in fiscal year 1984, the authorization request for the Marine Corps includes $78.5 million for procurement of 113 Light Armored Vehicles (LAV-25's). This program has been controversial in the past, particularly concerning Marine Corps and Army coordination. Is this program now proceeding as planned? Do you anticipate any problems?

General **Kelley**. The Army has worked diligently with us through the joint Project Management Office (PMO) to insure the earliest possible initial operation capability (IOC) is attained. We are very pleased with our joint progress thus far and look forward to the delivery of the first production LAV-25 to 29 Palms in November 1983. The accelerated nature of this acquisition endeavor provides significant opportunity for problems. However, due to the collective and dedicated efforts of the Services, PMO, and General Motors of Canada the program is on track and is anticipated to continue in that direction.

LHD-1

Senator **Cohen**. Procurement of a new class of amphibious ships—the LHD-1—begins in fiscal year 1984 at a cost of $1.38 billion. How critical is the initiation of this ship-building program in fiscal year 1984?

NAVY

Admiral **Small**. The LHD-1 is a key element of the Navy's plan to achieve the amphibious shipping required to lift and land the assault echelons of one Marine Amphibious Force (MAF) and one Marine Amphibious Brigade (MAB). Procurement in fiscal year 1984 and the accelerated design and construction program made possible by a sole source procurement to the shipbuilder of the LHAs, a similar class of ships, is critical to the earliest attainment of the requirement amphibious lift capability.

MARINE CORPS

General **Kelley**. LHD-1 procurement in fiscal year 1984 is critical to a program to relieve a chronic shortage of amphibious lift (vehicle square footage, cargo cubic footage and helicopter deck spots) for the assault echelons of an MAF and MAB. LHD-1 provides the equivalent of two LST's square footage, two LPH's or LPD's cargo cubic footage and one and one-half LPH's helicopter deck spots. Since the LHD-1 Class will eventually replace the aging LPH-2 Class, a delay in the inception of the LHD-1 program would exacerbate the helicopter deck spot shortfall.

HOSPITAL SHIP (T-AH)

Senator **Cohen**. The second Hospital Ship (T-AH) is to be procured in fiscal year 1984. Where does the Navy stand on procurement of the first Hospital Ship funded in fiscal year 1983? How important is funding the second ship in fiscal year 1984 compared to delaying until fiscal year 1985?

NAVY

Admiral **Small**. The hospital ship program is in the final stages of the contract design phase. The two competing offerors, APEX Marine Corporation and Prudential Lines, Incorporated, submitted their design packages to the Navy on April 6, 1983. Upon completion of the design and pricing evaluation, a budget quality estimate for the program will be submitted in early June 1983 for congressional review as required by the Fiscal Year 1983 Department of Defense Appropriations Act. It is planned that a fixed price contract for conversion and procurement of the first ship, with a priced option for the second ship, will be awarded in July 1983 to the offeror meeting the requirements of the hospital ship Circular of Requirements and who proposes the lowest total price for the two ships. Although integral to the total program, the second ship must be considered an option for contractural purposes since fiscal year 1984 funding has not been appropriated.

Funding of the second ship in fiscal year 1984 is vital to the earliest possible delivery of the total 24 operating room and 2,000 bed capability and the provision of this mobile, medical capability in support of our combat forces. The hospital ship program is structured as a two ship procurement. Delay of the second ship would place the entire program in jeopardy since the two offerors could interpret such action as a potential reversal of the Navy's decision to procure two ships with a total 24 operating room/2,000 bed capability. As a minimum, such a delay would defer the delivery date of the total hospital ship capability by at least one year. It would also create an atmosphere of program instability and severely disrupt the efficient conversion of the two ships by preventing workforce continuity in the successful offeror's shipyard, decreasing the material procurement savings permitted by an early option pick-up and increasing cost to the program by at least $20 million for the additional one year of escalation.

MARINE CORPS

General **Kelley**. We have been faced with a critical shortage of hospital assets for many years. A delay of one year funding could slip the second ship delivery date 2 years, which extends our inability to support combat forces. This sends a message to our expected enemies of our lack of commitment to our combat forces. Additionally, one ship is insufficient to support the global multi-site mission of the Marine Corps, particularly with the implementation (in 84, 85, and 86) of our new strategic mobility enhancement initiatives (Maritime Pre-positioning). The hospital ships (T-AH) provide the absolutely essential foundation for the expeditionary medical care continuum. It is imperative not only that they be completed on time, but that procedures be tested to ensure rapid manning with the required medical complement and ships crews.

MSC AND MTMC

Senator **Cohen**. As you know, last year the Department of Defense proposed to consolidate the Navy's Military Sealift Command and the Army's Military Traffic Management Command into a new command, to be entitled the Military Transportation Command. Some in the Navy objected to this proposed consolidation. In addition, some members of Congress also had reservations about this proposal. The result was a congressional prohibition of this consolidation. The fiscal year 1984 DOD Authorization request seeks removal of this prohibition. Secretary Lehman, I have two questions for you on this issue:

First, do you agree that congressional prohibition of such a DOD management action is appropriate?

Second, what are your views on the DOD proposal to consolidate these two commands?

Secretary **Lehman**. I agree with the sense of the Congress in that a consolidation of MSC and MTMC is not necessary.

The Military Services are currently working with OSD to achieve a major improvement in traffic management for lift requirements by land, sea and air without need of a merger.

QUESTIONS SUBMITTED BY SENATOR JOHN TOWER

TAKR AND TAKX

Senator **TOWER**. I am concerned about shipboard crane procurement for installation on the Navy TAKR and TAKX vessels. Twenty-one vessels fitted with 79 cranes are included. Eight vessels are SL-7 container ships purchased by the Navy from Sea-Land (TAKR). The others are Waterman Steamship, Maersk Line, and new construction by General Dynamics (TAKX), which are chartered by the Navy.

Four SL-7 vessels are in the 1984 budget, and contracts for the shipyard conversions have not been let. However, the cranes for these vessels were ordered in late January 1983.

These vessels represent a major procurement for MSC and perhaps the largest single acquisition of vessels by the Navy in recent history. The contracts have been awarded and conversion work has or will begin shortly in various shipyards.

At the same time, the Navy directly and indirectly required and procured 79 cranes for these vessels from a Swedish firm (Hagglunds) at a cost of about $90-95 million, a price estimated to be one-third higher than the cost for similar cranes built by U.S. firms.

What is the reason for buying foreign?

Secretary **LEHMAN**. Buy American Act and Trade Agreements Acts of 1979 are invoked in the ship conversion and the Government Specified Equipment (GSE) contracts. National Steel and Shipbuilding Company (NASSCO) was awarded a contract to act as a central procurement agent on behalf of the Navy for procurement of certain long-lead GSE, including cranes. The restrictions of these acts were fully considered by NASSCO when both domestic and foreign sources were solicited for this procurement.

Although a foreign source was selected as crane manufacturer for TAKR ships, the selection was made competitively and ultimately awarded to the lowest bidder who satisfactorily responded to all aspects of the procurement, including capability to produce eight identical shipsets within the required schedule, technical capabilities of the equipments, and ability to provide the necessary software support.

Senator **TOWER**. Has the United States lost the capability of supplying cranes to the Navy?

Secretary **LEHMAN**. No, the United States has not lost the capability of supplying cranes to the Navy. On the Navy's TACS program, cranes are being supplied by a U.S. manufacturer. In the case of the TAKR program, after initial screening of eleven (11) potential vendors responding to the request for quotation, five (5) vendors were contacted for further negotiations. Of these five, two (2) were U.S. based companies and three (3) were foreign companies. The purchase order for the TAKR cranes, ultimately issued by NASSCO, was based on competition.

SINGLE SOURCE PROCUREMENT

Senator **TOWER**. What is the justification for single source procurement?

Secretary **LEHMAN**. In order to insure commonality and standardization of equipment across all eight conversions and to meet delivery requirements of TAKR ships, the Government designated certain essential long lead time material as Government Specified Equipment (GSE). Included in the list of GSE were the cranes. The intent of the Government was for one participating shipyard to be selected to act on its behalf as a Purchasing Agent for GSE. The GSE contract was awarded to National Steel and Shipbuilding Company (NASSCO) who would then competitively solicit vendors for the designated equipment, including the cranes. Justification for single source procurement by NASSCO was the requirement that all eight shipsets of equipment be identical. This end could be achieved by any means other than procuring the materials from one supplier.

Senator **TOWER**. Isn't the Navy contributing to a further decline of our industrial base by placing large, exclusive contracts abroad?

Is this not an export of American jobs when at the same time we are considering separate legislation on a domestic jobs bill?

Secretary **LEHMAN**. The Department of the Navy has fully complied with applicable "Buy American" requirements in contracting for the TAKR requirements. The provisions contained in the contract awarded for long lead material to support the conversion effort and in the solicitation for the conversion contracts, provide for the waiver of the "Buy American" provisions for NATO countries and qualified countries specified in the Trade Agreements Act of 1979.

HAGGLUND CRANES

Senator **Tower**. The Hagglunds' design is unusual: twin cranes on a single pedestal. Why do we need this particular design? It is no more flexible nor can it unload cargo faster than U.S. built cranes.

Secretary **Lehman**. The Hagglunds' design is of a general layout very common aboard modern break-bulk merchant ships worldwide. Technical and operational constraints for the TAKR program dictate that the crane system should be capable of servicing two hatches at the same time. All but one of the manufacturers who responded to the quotation described a system of two crane houses on one pedestal. The one who did not propose this arrangement offered instead a unique design consisting of two cranes which operated from a single pedestal, and controlled from a single house, a design which also met all technical requirements. On the TACS program the crane selected is similar in type to the TAKR crane, i.e., twin cranes on a single pedestal, and is being supplied by a U.S. manufacturer.

Senator **Tower**. Why were the specifications written in favor of the Hagglunds' design? To discourage competition and assure that the contracts were awarded to Hagglunds?

Secretary **Lehman**. The specifications for the TAKR cranes were not written in favor of the Hagglunds' design. On the contrary, the inquiry purchase specifications sent to potential vendors on June 30, 1982 by NASSCO specified for each crane type, models by a U.S. company, Lakeshore Incorporated, models by Hagglunds, or equal.

Senator **Tower**. The arrangement of machinery, controls, and power supply is cramped, complicated, and difficult to repair, especially considering that spares must come from Sweden. Why is it not possible to utilize American built cranes that are simpler in design, proven in service, use domestic spare parts, and can be repaired by regular servicemen?

Secretary **Lehman**. American-built cranes were solicited, and did meet all technical requirements; however Hagglund cranes were selected by competitive process. The Hagglund cranes selected for TAKR ships are in full compliance with all regulatory bodies and utilize design standards, components and manufacturing standards proven suitable for the intended use aboard ship. Stal-Laval (Hagglund) is a worldwide supplier of cranes and spares and repair parts are readily available. In addition, procured with each crane are spares and repair parts for one year of service.

Senator **Tower**. I have been told that the cranes needed to offload these vessels are available in the United States from many manufacturers, that the initial cost savings is estimated to be about $30 million; and that lower maintenance and repair costs over the service life of the cranes will further increase overall savings for taxpayers.

Please address each of these three points. If they are not true, please explain exactly why, and give the facts on each one. If they are true, please justify the Department's rationale for procuring more expensive, less maintainable cranes, or describe the program by which the Department of the Navy plans to correct this deficiency.

Secretary **Lehman**. Cranes, such as those selected for TAKR ships, are available in the United States. After initial review of quotations from 11 vendors, 6 were not approved for technical engineering reasons which could not be resolved within the time available, considering the manufacturing lead times necessary and the planned installation dates of the equipment. From the five remaining vendors, of which two were U.S.-based companies, additional negotiations were conducted. Ultimately, the selection of the crane manufacturer was made to the lowest bidder, Stal-Laval (Hagglund) at a substantial cost savings to the Government in comparison to the bids from the two U.S. based companies. The maintenance and repair costs over the service life of the cranes are considered equivalent to similar-design cranes manufactured by U.S. companies.

Senator **Cohen**. Just let me say, Mr. Secretary, that you have been an aggressive and articulate advocate on behalf of the Navy and let me say you, General Kelley, and others, largely through your own articulate exposition of the needs of the Navy, have been so successful in the past 2 years of helping to fund the goal of the 600-ship Navy.

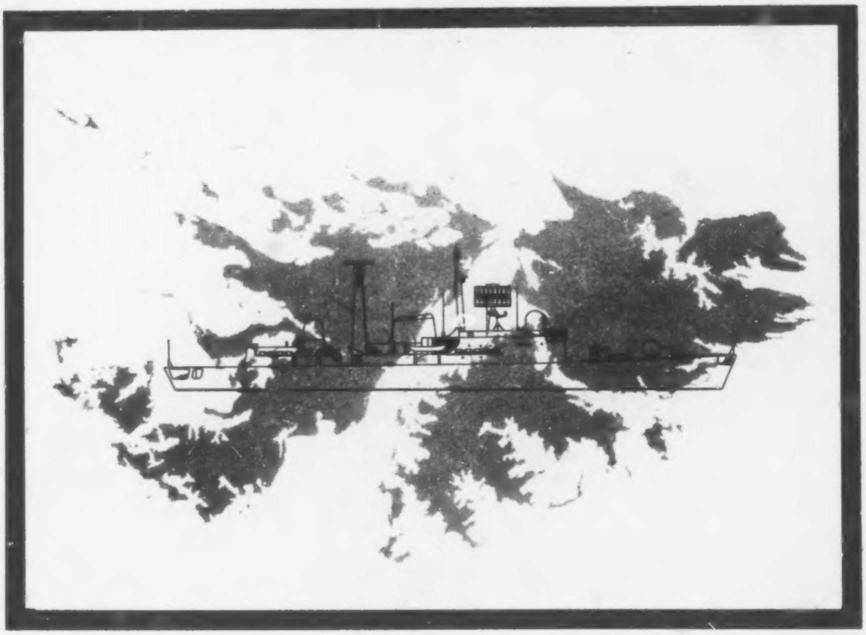
I think you are to be commended and recognized by the members of the committee who are not here, but I know they share that viewpoint. The committee will stand adjourned.

[Whereupon, at 12:10 p.m., the subcommittee adjourned.]

3295

LESSONS OF THE FALKLANDS

SUMMARY REPORT
FEBRUARY 1983



Department of the Navy
Washington, D.C. 20350

CONTENTS

1. Overview 1

2. Chronology 15

3. Lessons of the Falklands 23

   A. Air Operations 25
   B. Antiair Warfare/Antiship Missile Defense 31
   C. Antisubmarine Warfare 34
   D. Antisurface Warfare. 36
   E. Amphibious Warfare 38
   F. Command, Control, and Communications 43
   G. Electronic Warfare 44
   H. Intelligence 45
   I. Environmental Conditions 45
   J. Logistics/Sustainability 47
   K. Mine Warfare 50
   L. Personnel 51
   M. Press Coverage 53
   N. Readiness and Mobilization 54
   O. Ship Survivability 57
   P. Special Forces Operations 61
   Q. Submarine Operations 61
   R. Surface Ship Operations 65

Appendices

   A. Falkland Islands Study Group A-1
   B. Forces Engaged B-1
   C. Combat Losses C-1
   D. Geography and Climate D-1
   E. Glossary E-1

1. OVERVIEW

A. INTRODUCTION

The Falkland Islands conflict included the first truly naval confrontation since the Pacific conflict in World War II.

In trying to relate the lessons--and there are many to be learned from the Falklands war--to a potential conflict with the Soviet Union, we first need to look at the conflict in absolute terms and then consider it in the light of Soviet-U.S. capabilities.

The essential lesson from the Falklands is confirmation of how well the U.S. Navy and Marine Corps would have been prepared for a similar event. U.S. Navy and Marine Corps forces have been structured to project power and carry out actions of this nature anywhere on the globe.

Most of what happened in the South Atlantic supports the judgments that underlay all that is being done in this Administration's naval recovery program. These efforts are based on almost 40 years of post-World War II experience in U.S. naval operations in peace and hostilities, with extensive and sustained operations in European, Asian, and Indian Ocean waters, often under tense regional conditions and in close proximity to Soviet operating forces.

The overall lessons of the Falklands conflict are currently being studied in great detail by a study group formed by the Secretary of Defense. That effort is expected to be completed in the Summer of 1983. The purpose of this report is to present an unclassified summary of the Department of the Navy's study of the conflict in the South Atlantic.

B. PERSONNEL

As in nearly every battle in recorded history, the performance, training, and morale of the personnel involved were the most important determinants in the outcome. The Argentine armed forces relied heavily on conscription and had a low experience level, being trained primarily for internal security and border defense.

British armed forces, like their U.S. counterparts, are entirely volunteer. Their training and exercising is oriented toward combat against the Soviet armed forces) and they participate extensively in a wide variety of offensive and defensive NATO military exercises. The performance and morale of personnel in all elements of the British forces was uniformly high, and their training and experience were significantly higher than were the Argentines'.

Argentine Air Force and Navy pilots performed extremely effectively, demonstrating a high degree of dedication and courage. The approximately 1,000 Argentine Marines who took part in the conflict showed a considerably higher level of experience and morale than their Army counterparts, who were generally young, inexperienced conscripts with only a few months service and only minimal training. A comparison of staff planning, logistic support, troop employment, and overall combat condition of ground troops suggests a substantial British advantage in quality of leadership preceding and during the battle.

C. INTELLIGENCE

Next to personnel, the most important determinant of the battle outcome appears to have been intelligence. From a variety of technical and other sources, the British forces had available to them substantially better information regarding Argentine force levels, deployments, tactics and intentions than had the Argentine forces about those of the U.K. Some knowledgeable observers go so far as to say that without that substantial intelligence edge, the outcome would have been reversed. The experience of the Falklands has demonstrated that it is necessary to have accurate, up-to-date information on weapon and sensor systems capabilities worldwide. This includes allies as well as potential adversaries. Efforts must be enhanced to collect and analyze information on all potential threats--not merely on the major threat, the Soviet Union.

D. DEFENSE IN DEPTH

There are obvious limitations in extrapolating useful comparisons from a very limited conflict. However, the repeated success of Argentine aircraft in penetrating British defenses in daylight, and attacking forces afloat and ashore, provides a sound basis on which to draw some lessons. The British fleet lacked adequate fleet air defense in depth, including the essential keystone of Airborne Early Warning and long-range air defense fighters with multiple missile capability. Virtually none of the aircraft which hit the British ships from mainland bases in Argentina could have done so had there been modern, full-sized carrier airwings in the opposing force. A well-rounded complement of aerial surveillance aircraft, interceptors, antisubmarine aircraft and all-weather attack bombers would have made all the difference. The British were further hampered by a lack of modern radars, target identification systems, data management systems, and electronic warfare equipment in their fleet.

The outer air defense rarely consisted of more than four SEA HARRIERs, each with a short-range intercept radar, carrying only two air-to-air missiles each. Due to the range of the patrol stations from their carrier bases, the SEA HARRIERs were capable of maintaining station for only about 20 minutes. Against the large number of attackers that penetrated this very thin air defense outer barrier, British surface-to-air missile systems like SEA DART and SEA WOLF, although often saturated, generally performed better than expected. But because their combatant ships lacked adequate "last ditch" close-in weapons, the British were unable to knock down the remaining bombers reaching the fleet. Of course, the merchant-type ships had little or no defenses. Two destroyers, two frigates--all equipped with missiles and guns--a landing ship and a merchant ship were lost. Another nine ships were hit by bombs which, had they detonated, could have caused their destruction. That they did not was both a tribute to the courage of the Argentine aviators for pressing the attacks so close in an effort to evade British defenses and still bomb their targets--and a lesson that inattention to ordnance fuzing can negate the best military performance. Seven antiship missiles were launched, five from aircraft and two from shore launchers. Three ships were hit by these missiles, and two of those were lost, but to fire, not to the explosions of the missiles. In fact, the missiles that hit HMS SHEFFIELD and the ATLANTIC CONVEYOR probably failed to detonate. These attacks are being studied carefully--the tactics employed and the weapons systems involved--with a view toward improving U.S. Navy point defense systems, and the Navy is working toward more rapid installation of antimissile systems, such as NATO's SEA SPARROW, VULCAN PHALANX, and the RAM (Rolling Airframe Missile) system. It is important to remember that--with its vastly superior early warning and outer air battle assets--the percentage of "leakers" which could get through to an American force would be significantly lower than in the Falklands. Those that did get through would still have to face a much thicker and more capable set of close-in defense layers than the British were able to provide.

Electronic warfare equipment, to detect enemy radars and communications, played a role in the conflict. The necessity for passive electronic threat warning systems, and decoy systems like chaff was amply demonstrated. Chaff expenditure, to confuse radars on aircraft and missiles, was extremely heavy. The U.S. Navy is reevaluating the need to increase each ship's allowance of chaff, and also the tactics for its employment, based on the Falklands experience. The U.S. Navy is also looking closely at the requirement to expand the Fleet's electronic warfare capability in light of the demonstratedly greater threats it faces.

E. LARGE WARSHIPS VERSUS SMALL WARSHIPS

One of the clearest lessons of the Falklands is that smaller, cheaper, less-well armed combatants can be a very false economy because of their much higher degree of vulnerability, as demonstrated by the loss of the four Royal Navy combatants. If any one of the 14 successful attacks against British ships had instead hit the Battleship NEW JERSEY, it could not have done sufficient damage to prevent continuing operations. The EXOCET missile that sank SHEFFIELD, for instance, would not have been able to penetrate the armor system of the NEW JERSEY. Numerous similar instances occurred in World War II, such as when the Battleship SOUTH DAKOTA sustained 45 hits from 8-inch naval guns and continued to operate, or when the Japanese battleship MUSASHI absorbed 14 torpedoes and 22 large bombs and continued to steam ahead. It is doubtful if any of the attacks sustained by British ships would have penetrated to a vital space or done significant damage to a modern U.S. aircraft carrier. The smaller carriers deployed by the U.K., by contrast, are far more vulnerable to complete loss from torpedo, missile, or bomb attacks because they lack the multiple hulls, armor plate and redundant damage control systems which are inherent design characteristics of large U.S. carriers.

The small British carriers, though well-designed and professionally manned, are incapable of accommodating modern high-performance aircraft. They were barely able to provide the minimum air power necessary to support the retaking of the Falklands and, despite heroic efforts by SEA HARRIER pilots, the British never established anything approaching control over the skies above the Falklands. Even Argentine resupply aircraft from the mainland were able to land at Stanley right up until the night before the surrender. Fortunately for the British, Argentine air attacks were confined to daylight hours only, which limited the air threat to about 8 hours out of every 24.

A U.S. carrier could have maintained a vastly more capable CAP on station on a round-the-clock basis, if necessary, and a U.S. Task Force would have suffered far fewer losses and damage overall because of the order of magnitude greater protection afforded by sophisticated Navy aircraft, missiles, guns and electronic systems.

Under peacetime conditions, the British carriers accommodate only five SEA HARRIERs and 9 to 12 SEA KING antisubmarine helicopters each. HMS HERMES, the largest British carrier, displaces about 30 percent of one of our NIMITZ class carriers and--even with an enhanced air group literally jammed on board for the Falklands conflict--carried a very small air group of very limited capabilities: a dozen SEA HARRIERs, half a dozen RAF HARRIERs and half a dozen ASW helicopters. This compares to a U.S. carrier group with 80 or more fixed-wing aircraft and a half dozen ASW helicopters.

The smaller carriers are far less sustainable. Propelled by gas turbines or, in the case of HERMES, steam turbines, these ships have relatively limited endurance before they require refueling. They also have limited on-board stowage for ordnance. In the Falklands, both ships had flight decks encumbered by stacks of bombs, missiles, and fuel tanks which could not be fitted into the ships' magazines, thus making them very vulnerable had any Argentine aircraft been able to locate and attack them. In contrast, nuclear-powered U.S. carriers not only have virtually unlimited steaming endurance, they also carry thousands of tons of munitions and months' worth of spare parts for all of their embarked aircraft. Additionally, our carriers have extensive on-board repair capabilities which cannot be provided on a small carrier. Taken together, two British carriers were able to operate less than 30 V/STOL aircraft and about a dozen ASW helicopters at the peak intensity of combat activity. That's about 50,000 tons of aircraft carriers to operate one-third of the number of far more capable aircraft that we carry in one 90,000-ton NIMITZ class carrier.

F. AIRCRAFT PERFORMANCE

V/STOL HARRIER

U.K. HARRIERs, both Royal Navy and RAF, were surprisingly reliable and versatile during the battle. The 28 SEA HARRIERs deployed to the South Atlantic flew more than 1,200 sorties in 44 days. Their availability was exceptionally high--almost 90%. Fewer than one percent of planned missions were scrubbed because of aircraft unserviceability. The radar and attack weapon control systems in the SEA HARRIER proved to be reliable and versatile but limited in range and capability. In air-to-air combat, SEA HARRIERs destroyed at least 20 Argentine aircraft, 16 of them with U.S.-produced SIDEWINDER missiles. In many engagements the SEA HARRIERs were attacking aircraft which were operating at the extreme limits of their range and could not afford to maneuver if they were to return home safely. Similarly, the SEA HARRIERs had limited time on station and limited air-to-air ordnance loads. They were placed at great disadvantage by the lack of adequate radar-controlled cueing and vectoring for intercepts. Fortunately for the British, the Argentine aircraft actually attempted to attack the SEA HARRIERs only on the first day of the air battle.

The performance of both types (RN & RAF) of HARRIERs in air-to-ground action was less impressive. Together they delivered fewer than 200 general-purpose bombs, including only four laser-guided bombs, and had little effect on the outcome of the land battle.

Four SEA HARRIERs and one RAF HARRIER were lost in operational accidents and two SEA HARRIERs and three RAF HARRIERs were lost to enemy action, none in air-to-air combat.

The advanced HARRIER AV-8B being procured for the United States Marine Corps will play a very different, but equally versatile, role in support of Marine operations. It is optimized for very high sortie generation and close air support from unprepared sites. A totally new cockpit and control augmentation will substantially reduce the high accident rate formerly experienced by earlier HARRIER models, while the range and payload will be nearly doubled.

Helicopters

Helicopters were, without question, a most valuable aviation asset of the British forces. They were used successfully as antiship missile platforms, for at-sea replenishment, logistic support, troop lift, equipment lift to the battlefield, command and control, commando raids, and many utility functions. Three of the four heavy lift CHINOOK helicopters were lost on the ATLANTIC CONVEYOR, resulting in a severe shortage of mobility for heavy equipment. Since the battle, the U.K. has deployed an airborne early warning radar aboard several Sea King helicopters and operates them routinely.

The Argentine forces used their helicopters almost entirely for battlefield logistics, utility support and surveillance.

VULCAN Strike Aircraft

Flying from Ascension Island, the RAF undertook a total of five strike missions by VULCAN strategic jet bombers against the Falklands. Three single plane sorties with each VULCAN carrying 21 1,000-pound bombs attacked Port Stanley Airfield. Two single plane sorties with antiradar missiles attacked Argentine radar installations. Each of these sorties required multiple inflight refuelings and had virtually no impact on either the Argentine surveillance radars or on Port Stanley Airfield. Both the airfield and surveillance radar installation remained operating until the last day of the war.

C-130 HERCULES

The venerable HERCULES provided the backbone of airborne logistics for both the U.K. and Argentina during the conflict. For the British, they were operated as aerial refuelers, were refueled themselves, and were used to air drop critical supplies at sea and ashore. Right up to the final day of the war, Argentine HERCULES transports flew critical resupply missions from the mainland, usually under threat of HARRIER attack. Argentine bombers were air-refueled by HERCULES tankers to extend their operating range.

A-4 SKYHAWK

The Argentine Navy and Air Force operated about 64 SKYHAWK light attack aircraft with considerable effect, inflicting most of the damage on the British fleet.

SUPER ETENDARD

The Argentine Navy operated five SUPER ETENDARD fighter bombers (about the equivalent of the U.S. A-7E in capability). They were very effective as the firing platforms for EXOCET missiles with their attack radar and inertial navigation system permitting them very low level ingress, with a pop-up to fire, and then a rapid egress. The Argentines did not hazard these aircraft in iron bomb attacks over the target.

G. LOGISTICS

The old aphorism that amateurs talk about strategy while professionals talk about logistics was validated again in the Falklands. The outcome of the battle may be seen to be a failure of Argentine logistics and a major success of British logistics. Following their capture of the Falklands, the Argentines poured troops and military supplies into the islands. A large stockpile of weapons and munitions was built up. The Argentine command in the Falklands, however, was unable to effectively distribute the supplies and weapons, hence troops in the field were critically short of some items that were available in abundance at supply dumps in the Falklands themselves. Once the British Task Force arrived in the area, bulk supply by sea almost ceased, and the Argentine command was dependent upon airborne resupply. These resupply flights were carried out at night from the mainland to Port Stanley Airfield right up until the eve of the surrender. Only one of these supply aircraft was intercepted and destroyed by the British, and the efforts of ship-based HARRIERs and Ascension-based VULCANs to close down the airfield at Stanley were not successful.

Though the battle was relatively brief, the British forces required enormous quantities of munitions, provisions, fuel and other supplies.

British logistics operations were hampered by the distances from home bases and supply depots, an initial shortage of shipping, and limited stocks of certain materiel. Fifty merchant vessels described by the RN as "Ships Taken Up From Trade" (STUFT) were used in supporting British operations. They included a variety of merchant types--container, roll-on roll-off, passenger, tanker, plus several special purpose ships, such as the youth cruise ship, UGANDA, that was rapidly converted to a hospital ship. Fuels were the most critical logistic consideration, with nearly one-third of the STUFT ships being tankers. Most of the merchant ships were rapidly fitted with at-sea refueling capability and maritime communication satellite terminals. Nineteen ships were additionally fitted to operate helicopters (two of these also delivered HARRIERs). A small number of merchant ships were also fitted with 20 or 40 millimeter antiaircraft guns or light machine guns.

Ascension Island, approximately half-way between Britain and the Falklands, served as a staging base for British forces. During the conflict, the British logistic buildup included the airlifting of 5800 personnel and 6600 tons of supplies from the United Kingdom to Ascension, an indication of the magnitude of the shore-based logistic support needed for an operation the size of the Falklands campaign. In many ways the logistics problems facing the British force off the Falklands were similar to those faced by U.S. naval forces which have been deployed to the Indian Ocean since 1979. The U.S. Navy has already instituted some changes in logistics planning and operations as a result of those earlier lessons and is refining them in the light of the British experience.

While the U.S. Navy has developed plans in conjunction with the Maritime Administration to use merchant ships from trade and the Ready Reserve Force, more effort is required to develop self-defense, aviation, and other naval systems for merchant ships so employed (a major initiative of the Reagan Administration has been to increase the size of the Ready Reserve Force from 29 merchant ships to 77--all intended for activation within 5-10 days). The U.S. Navy has developed the Arapaho concept of operating helicopters from a container ship and has evaluated and tested the hardware at sea. It has proved to be a feasible operation.

The magnitude of the operation required from the merchant fleet to support an operation the size of the Falklands underlines the fact that, while the task of mobilizing sufficient strategic sealift for adequate conventional deterrence is difficult enough, it would be impossible to sustain a conflict given the level of attrition suffered from submarine warfare in World War II. Allied naval forces can only defend the sealanes by ensuring a forward offensive defense against submarines.

H. SUBMARINE OPERATIONS

The Argentine Navy began the conflict with two of their four submarines operational: one relatively new German-built diesel-electric submarine, and one former U.S. GUPPY-type submarine of World War II construction. The guppy submarine SANTA FE, which was present when Argentine troops landed in the Falklands, was totally disabled by British forces off South Georgia on 25 April.

The German-built SAN LUIS, completed in 1974, made a patrol of an estimated 36 days during the conflict. The SAN LUIS located and operated in the area of the main British Task Force for some days. She was, however, unable to make a successful attack because of materiel problems. The submarine's main torpedo fire control panel was not operational and improper wiring of the backup panel caused all torpedoes to be fired on incorrect bearings. The British force prosecuted numerous suspected submarine contacts during that period, without success. The Argentine type 209 submarine SALTA did not participate in the conflict, because of problems with her diesel propulsion plant.

The ability of a modern diesel-electric submarine to engage a naval task force that is essentially stationary while operating in a specific area is not surprising. These submarines are extremely quiet when operated at low speeds and for this reason substantial helicopter, subsurface and surface antisubmarine warfare defense is required whenever a naval task force is constrained to a limited area.

The U.S. Navy remains convinced that diesel-electric submarines, as useful as they might be in such constrained areas, are not cost-effective for United States naval missions. This would not be the case if it were not for well over 100 modern diesel-electric submarines in our allied navies which are available to carry out those responsibilities.

As the crisis escalated in the South Atlantic in late March, three British nuclear attack submarines were directed to the Falklands area. Their ability to transit such a long distance at high speed permitted the U.K. to establish an exclusion zone 200 nautical miles in radius around the Falklands early in the conflict. The SSNs began at once to enforce this exclusion area to prevent Argentine ships from further reinforcing the garrison in the Falklands. They were successful. On 7 May, the British Government warned that any Argentine warship sighted more than 12 miles from the Argentine coast would be regarded as hostile and subject to attack. Ultimately, the Royal Navy deployed five SSNs and one diesel-electric submarine (HMS ONYX) to the South Atlantic. One of these SSNs, HMS CONQUEROR, was sent to South Georgia in late April to ensure that Argentine ships did not interfere with the recapture of that island by Royal Marines. The following week CONQUEROR successfully intercepted and sank the Argentine cruiser GENERAL BELGRANO, using 55-year-old design steam torpedoes. Following the sinking of the BELGRANO, the Argentine surface navy effectively retired from action. Thus, the effectiveness of the SSNs can be said to have contributed to the neutralization of the Argentine Navy.

I. SHIP SURVIVABILITY

No defense in depth, however effective, can be relied on as impenetrable. Thus, no matter how good, naval ships must be built to take substantial hits and keep fighting. The Falklands battle is rich in such lessons to be relearned.

GENERAL BELGRANO

The cruiser BELGRANO was sunk by a British SSN, as previously stated. The poor materiel condition of the 44-year-old cruiser and limited damage control training by the crew resulted in rapid, uncontrollable flooding and loss of the ship.

British Casualties

The British lost one destroyer to a fire started by the residual fuel from an unexploded EXOCET missile, one destroyer to bombs and strafing, two frigates to bombs, one landing ship to bombs, and one container ship to a fire caused by one or two EXOCET missiles that did detonate. In addition, two British destroyers, 14 frigates, and one landing ship were damaged during the conflict, all by Argentine air attacks with bombs, rockets or strafing, except for the destroyer GLAMORGAN, which was damaged by a shore-launched EXOCET missile.

There has been extensive discussion of the use of aluminum in warship construction and its effect on ship survivability. Aluminum is used in British and American ships for nonstructural bulkheads, ladders, and ventilation ducts. Most U.S. warships of post-World War II construction do have aluminum superstructures, because of the weight saving--particularly important when the ships carry radar antennas and other equipment relatively high above their centers of gravity.

The SHEFFIELD--which was lost to an uncontrolled fire after being hit by an EXOCET that did not detonate--had a steel superstructure, although one class of British frigates does have aluminum superstructures. There is no evidence that use of aluminum contributed to the loss of any of the British combat ships. The decision to provide a steel superstructure in the new ARLEIGH BURKE (DDG 51) class of U.S. destroyers was made well before the Falklands conflict.

In general, U.S. warships have better damage control and fire-fighting features built into them than any other navy. Constant training of the crews at sea and ashore in damage control has remained a fundamental element of U.S. Navy training since the lessons of the Pacific battles of World War II were learned the hard way. The effectiveness of this training has been demonstrated in several near catastrophic peacetime incidents, most recently the NIMITZ crash and fire in July 1981. The British experience in the Falklands, particularly with regard to certain interior construction materials and procedures, is being used to revise U.S. Navy construction techniques and damage control procedures, especially with regard to our smaller, frigate-type ships.

In summary, the Falklands experience demonstrates that modern warships can be defended against modern weapons like cruise missiles, but that they must have defense in depth and must be able to sustain hits, absorb damage and keep fighting. On the one hand, the SHEFFIELD was not at general quarters, was unready to sustain damage and was ultimately lost, even though the missile did not detonate. By contrast, the destroyer GLAMORGAN was struck by an EXOCET missile that did detonate, and while a major fire and shrapnel casualties killing 13 men resulted, the ship was able to continue operations with armament and weapons systems nearly intact--because she was ready.

J. RULES OF ENGAGEMENT

A new lesson to be learned from the Falklands, in contrast to earlier wars, is that in an era of modern computer and satellite communications, there must be much greater attention to command, control and rules of engagement. First, modern communications are now able to provide a veritable Niagara of communications for the operators in a war. The British commander in the field was at times overwhelmed by the volume of information coming to his flagship. Much greater attention must be given to disciplining communications in future conflicts. This is potentially a major problem as American forces modernize communications at all levels. All of it must still funnel into the decision-making commanders in the field. Second, such effective real-time communications carry with them the temptation for higher commanders to micro-manage operations in the field. This does not seem to have been a problem for the British force because of a prudent delegation of authority to the on-scene commander by the political decision makers and national command authorities. Such delegation, however, carries with it the necessity for carefully thought-through, pre-approved rules of engagement. This is particularly relevant to U.S. forces forward-deployed in crisis situations. The more so today, because as Admiral Gorshkov has put it so well, there is an enormous premium on "the struggle for the first salvo."

K. AMMUNITION SUSTAINABILITY

The Falklands conflict is yet another reminder, following on every war since Korea, that rates of consumption of high technology weapons always exceed even generous estimates by planners.

It is perplexing to American planners to hear voices in the U.S. Congress suggesting that defense is getting too much budgetary support when after 15 years of neglect it is not possible to fill the launchers and magazines of the active U.S. Navy fleet of 514 ships even once with high technology munitions.

Another important lesson of the Falklands for U.S. forces is illustrated by the British sinking of the BELGRANO with 55-year-old design torpedoes; since it is not likely under present funding constraints that sufficient new munitions will be available, it is imperative that the older generations of still-useful weapons be retained, rather than scrapping or selling them, as has been the practice in recent times.

L. AMPHIBIOUS OPERATIONS

The British objective in their OPERATION CORPORATE was to recapture the Falklands, South Georgia, and South Sandwich Islands. The major amphibious operation was in the Falklands. The British landing forces, consisting of Royal Marines and British Army soldiers, were carried to the Falklands in a small number of LSL and LSD-type specialized amphibious ships and several passenger-carrying merchant ships.

Through careful planning, skill, and good fortune, the main landings at San Carlos were carried out without initial opposition. This illustrated an often overlooked advantage of amphibious assault. While it is difficult in the era of modern communications and intelligence to achieve strategic surprise, it is still possible, with the right forces, to achieve tactical surprise and to land "where they ain't." For instance, a Marine Amphibious Brigade off the coast of the Virginia Capes at dusk can land troops ashore anywhere between the tip of Long Island and Cape Hatteras before dawn.

The British were at a substantial disadvantage in their Falklands amphibious landings because they did not have air superiority. U.S. carriers would provide air superiority over any U.S. amphibious landing.

The landings at San Carlos, which began in darkness at 0340 local time, were carried out by 16 landing craft carrying troops and equipment to the beach from the ships offshore. At dawn, ship-based helicopters joined in the shuttle of supplies to the beach. The British beachhead had been firmly established when Argentine air raids began in the afternoon. The later amphibious landing at Fitzroy suffered gravely from lack of air cover. The landing was initially conducted unopposed under night and poor visibility conditions. However, when the weather did clear, the two unescorted and undefended amphibious ships were severely damaged by Argentine air attacks, with heavy loss of life.

The British experience demonstrated that amphibious shipping can survive against air attacks, although not without losses. Most of the merchant ships employed to carry troops and materiel into Falkland Sound mounted only a few machine guns for defense. The two large RN assault ships of the FEARLESS Class did have SEA CAT missiles and 40-millimeter guns, as well as passive ECM, including CHAFF. But the smaller logistic landing ships had only light guns installed.

The U.S. Navy's amphibious ships, which are armed, are being fitted with variants of the SLQ-32 ECM system and chaff, and could be expected to have a significant capability against the same level of threat. The U.S. Navy is investigating the possibility of providing bolt-on self-defense systems for merchant ships that may be called upon to support U.S. amphibious operations.

The U.S. Navy currently has several times the British amphibious lift, with 60 active amphibious ships, most significantly larger than comparative British types, plus four ships in the Naval Reserve Force. In addition, one of the most dramatic breakthroughs in recent amphibious force augmentation has been the establishment of the maritime prepositioning ships, the T-AKX, 13 of which are under contract. This will enable the lift of three complete Marine Amphibious Brigades into an unopposed environment. In addition, the Reagan Administration has programmed a growth from one Marine Amphibious Force (MAF) equivalent lift to one MAF plus an additional MAB of amphibious lift. In the current five-year plan there are 12 ships of the LSD-41 and the LHD-1 classes, the latter being an amphibious ship that is convertible into a V/STOL carrier.

M. NAVAL GUNFIRE SUPPORT

The Falklands again illustrated the essential value of naval gunfire support. During the battle 14 British destroyers and frigates mounting a total of 18 4.5-inch naval guns fired roughly 7900 rounds in support of the landings and subsequent land campaign. This fire supported friendly troops, suppressed enemy fire, destroyed enemy supplies and aircraft on the ground, and seriously hurt the morale of the defenders. The British were limited by gun caliber, and hence hitting power and range. The United States Navy currently has a large number of five-inch guns in the fleet and is recommending in the 1984 budget the procurement of the five-inch laser-guided projectile, which will greatly increase the one-shot kill capability of naval gunfire.

The most dramatic increase in U.S. Navy naval gunfire capability took place in December, when the battleship NEW JERSEY was recommissioned five weeks ahead of schedule and under budget. This one ship can deliver 803 tons of a variety of 16-inch and 5-inch ammunition types in the space of only 30 minutes. That is the equivalent of 20 modern DD-963 class destroyers. It carries more than 7000 rounds of ammunition in its magazines. The battleship IOWA will be delivered to the fleet in early 1984, ahead of schedule and on budget. Money for reactivation of USS MISSOURI is contained in the 1984 budget and money for reactivation of USS WISCONSIN will be in the 1985 budget. The 23 mile range of the IOWA class battleship's 16-inch guns means that naval gunfire support capability will be increased substantially when these ships rejoin the fleet.

N. PROGRAM IMPACTS

As a result of the analysis of the South Atlantic conflict, the U.S. Navy has made some changes to the pace and scope of certain fleet modernization programs and ship alterations. Some of these changes are accommodated in the FY-84 budget and more will be reflected as our analysis is refined and we prepare for the FY-85 Navy program. Chapter 3 provides somewhat more detailed information on the Falklands conflict and its relationship to U.S. Navy programs.

2. CHRONOLOGY OF EVENTS

19 March: An Argentine naval transport ship landed about 60 Argentine scrap workers on South Georgia Island (Leith Harbor). Ten of the scrap workers stayed on the island.

29 March: Nuclear submarine HMS SPARTAN ordered to embark stores and weapons at Gibraltar for deployment to the South Atlantic.

30 March: Submarine HMS SPLENDID ordered to deploy. A few days later HMS CONQUEROR sailed.

2 April: The Argentine assault on the Falkland Islands occurred as follows. 0300: Argentine SS SANTE FE landed 20 commandos to secure a beachhead at Stanley. Eighty commandos from DDG SANTISSIMA TRINIDAD assaulted the Royal Marine barracks (empty) and Government House (opposed). 0630: The main force of Marines and 20 LVTs were disembarked from LST CABO SAN ANTONIO to help secure the airport and harbor area. CV VIENTICINCO DE MAYO, with 1,500 army troops embarked, remained just outside Stanley harbor.

3 April: Argentine troops landed by helicopter on South Georgia Island. Royal Marines shot down a PUMA helicopter and slightly damaged GUERRICO before surrendering.

5 April: A British Task Force, including the aircraft carriers HMS INVINCIBLE and HMS HERMES and 1,500 Royal Marines, deployed from Portsmouth, England. (Figure 1 indicates the lengthy distances covered by British forces. The Falklands lie 7,100 miles southwest of the U.K. and over 3,300 miles from Ascension Island, but only 400 miles from the Argentine coast.)

12 April: British imposed a 200 nm Maritime Exclusion Zone (MEZ) around the Falklands. The exclusion zone was initially enforced by submarines.

22 April: British commandos, brought in by helicopter, arrived in South Georgia Island on a reconnaissance mission. Two of the helicopters crashed in a blizzard, but the crews and troops were subsequently rescued.

25 April: A small British Task Force staged an assault on South Georgia Island. The Argentine submarine SANTE FE was sighted on the surface and attacked by helicopters. The submarine was damaged and beached in Grytviken Harbor. After a Naval gunfire barrage, British troops forced the Argentine troops to surrender.

30 April: A Total Exclusion Zone (TEZ) was imposed around the Falkland Islands (Figure 2).

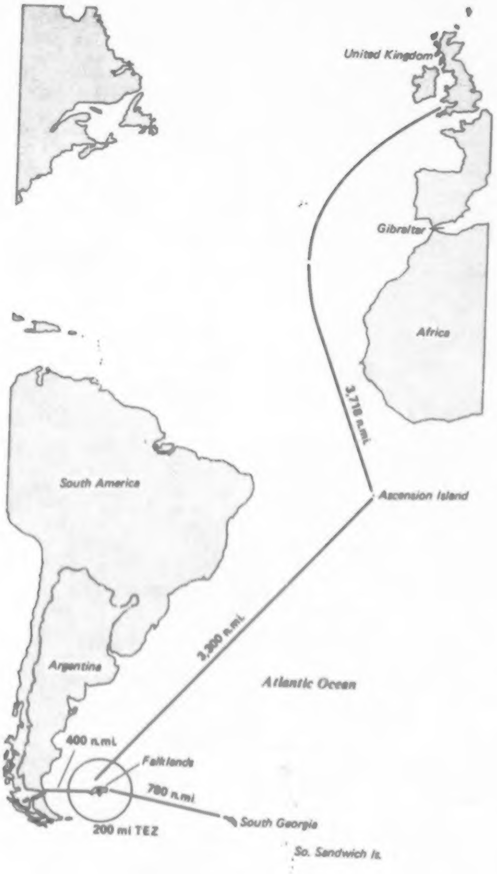

United Kingdom
Gibraltar
Africa
3,718 n.mi.
Ascension Island
South America
3,300 n.mi.
Atlantic Ocean
Argentina
400 n.mi.
Falklands
780 n.mi.
South Georgia
200 mi TEZ
So. Sandwich Is.

FIGURE 1. ATLANTIC OCEAN
DISTANCES BETWEEN SIGNIFICANT LOCATIONS

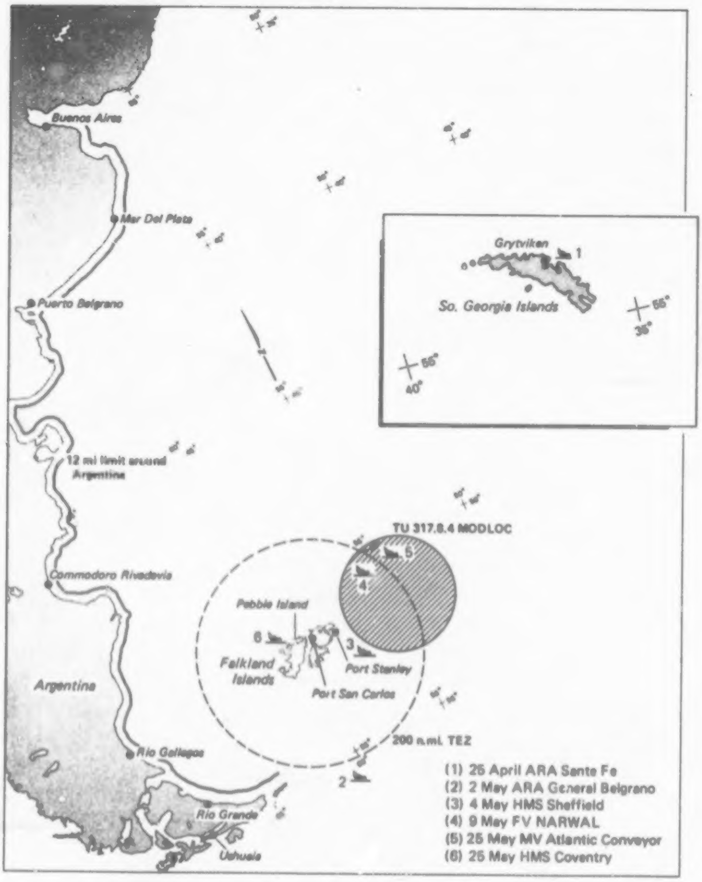

Buenos Aires
Mar Del Plata
Puerto Belgrano
Grytviken
1
So. Georgia Islands
55°
36°
55°
40°
12 mi limit around Argentina
TU 317.8.4 MODLOC
5
4
Commodoro Rivadavia
Pebble Island
6
3
Falkland Islands
Port Stanley
Port San Carlos
Argentina
200 n.mi. TEZ
Rio Gallegos
2
Rio Grande
Ushuaia
(1) 25 April ARA Sante Fe
(2) 2 May ARA General Belgrano
(3) 4 May HMS Sheffield
(4) 9 May FV NARWAL
(5) 25 May MV Atlantic Conveyor
(6) 25 May HMS Coventry

FIGURE 2. SOUTH ATLANTIC OCEAN
APPROXIMATE POSITIONS OF SHIP SINKINGS, THE TOTAL EXCLUSION ZONE (TEZ) AND RN CARRIER OPERATING AREA (MODLOC)

1 May: A VULCAN bomber from Ascension Island attacked the airstrip at Port Stanley before dawn. One bomb hit the runway. SEA HARRIERS attacked Port Stanley and Goose Green air strips at dawn. Argentine MIRAGES and SKYHAWKS attacked RN ships operating near the Falklands.

2 May: The Argentine Navy had established four task groups to maintain a presence just outside the 200 nm exclusion zone. One task group included VIENTICINCO DE MAYO, a second included the cruiser ARA GENERAL BELGRANO, and the remaining two consisted of destroyers and frigates. GENERAL BELGRANO was attacked outside the exclusion zone by HMS CONQUEROR and sunk. Figures 2 and 3 indicate the approximate positions of ships sunk during the conflict.

3 May: An Argentine patrol tug fired on a British SEA KING ASW helicopter from HMS HERMES. In reaction, a LYNX helicopter launched SEA SKUA missiles at the ship, ALFEREZ SOBRAL, which was damaged.

4 May: British attacked Port Stanley Airfield with a VULCAN bomber, followed by SEA HARRIERS. SEA HARRIERS staged an attack on Goose Green. HMS SHEFFIELD was attacked by two SUPER ETENDARDS with AM.39 EXOCET missiles. One missile impacted amidships above the water line and started a major fire. SHEFFIELD was abandoned and later sank on 10 May while under tow.

7 May: British warned that any Argentine warships or military aircraft over 12 nm from Argentina's coast would be treated as hostile.

9 May: Two HARRIERS attacked the Argentine intelligence-collection vessel NARWAL operating within the original 200 nm exclusion zone. One Argentine was killed, and 25 prisoners were taken from the vessel before it sank.

11 May: During a night action British frigate ALACRITY attacked and sank the Argentine naval cargo ship ISLAS DE LOS ESTADOS in Falkland Sound. Troop ship SS CANBERRA joined the main Task Force to the east of the Falklands.

12 May: In heavy fog, 12 Argentine A-4s attacked HMS BRILLIANT and GLASGOW near the Falklands. Two A-4s were shot down and a third crashed into the sea trying to evade surface-to-air missiles. HMS GLASGOW suffered damage from a bomb passing directly through the hull without exploding. QUEEN ELIZABETH II sailed from England with the troops of the Fifth Infantry Brigade.

14 May: Special Air Service (SAS) teams landed on Pebble Island and, along with Naval gunfire, destroyed 11 aircraft on the ground, an ammo dump, and a mobile land-based radar.

20 May: UN Secretary Perez de Cuellar announced the collapse of British-Argentine negotiations.

21 May: British troops landed at four separate points around San Carlos. Engineer troops began building a landing pad for HARRIERS. Argentine aircraft counterattacked the invasion forces in several waves. One frigate, HMS ARDENT, was sunk. HMS ANTRIM and HMS ARGONAUT were hit by bombs which failed to explode. Two other ships were seriously damaged. Fifteen Argentine aircraft were reported destroyed in this attack. (Figure 3, a map of the Falkland Islands, indicates the principal settlements in the Islands.)

22 May: British troops expanded and consolidated their positions in the vicinity of San Carlos.

23 May: MIRAGES and SKYHAWKS attacked the British Task Force; one frigate was damaged. British shot down six MIRAGES and one SKYHAWK.

24 May: HMS ANTELOPE exploded and later sank during an attempt to disarm a bomb that had been lodged in the engine room since the 23 May battle. Three waves of Argentine aircraft attacked the British Task Force, and eight were reportedly shot down. Two LSTs were damaged in this attack.

25 May: Argentine aircraft continued to attack the British Task Force. Seven A-4's were shot down. HMS COVENTRY was hit by several bombs and capsized. Two SUPER ETENDARDS launched EXOCET missiles against SS ATLANTIC CONVEYOR and set the ship on fire.

27 May: British Army paratroops advanced on Argentine troops at Darwin/Goose Green while Royal Marines and light armor moved toward Port Stanley. MIRAGES and SKYHAWKS launched another attack on the British Task Force. Two SKYHAWKS were reportedly shot down.

28 May: Paratroops captured Goose Green and Darwin, after about 12 hours of fighting.

29 May: An Argentine MIRAGE and several SKYHAWKS attacked British positions at San Carlos, causing minimal damage.

30 May: Argentine SKYHAWKS and SUPER ETENDARDS attacked the main British Task Force; three SKYHAWKS were shot down with no damage to British ships reported.

7 June: Royal Marine commando forces captured Mount Low, overlooking the Stanley Airfield.

8 June: Argentine SKYHAWKS and MIRAGES attacked two British LSL's at Fitzroy. Both SIR TRISTRAM and SIR GALAHAD were set on fire. Badly damaged, SIR GALAHAD had to be scuttled; the other ship has since been returned to England for repair. HMS PLYMOUTH also suffered serious damage, while in Falkland Sound. Four Argentine aircraft were reportedly shot down.

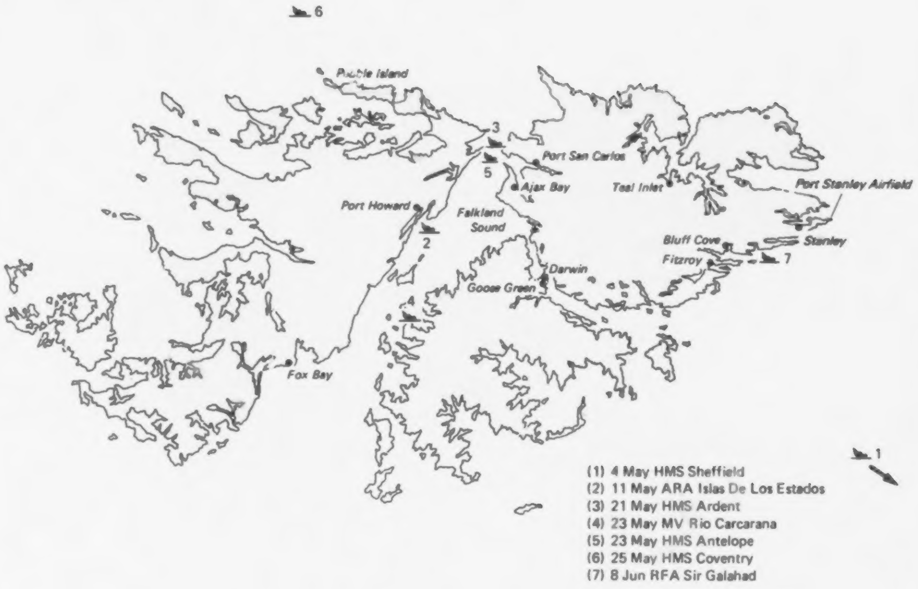

6
Pebble Island
3
5
Port San Carlos
Ajax Bay
Teal Inlet
Port Stanley Airfield
Port Howard
Falkland Sound
2
Bluff Cove
Stanley
Fitzroy
7
Darwin
Goose Green
4
Fox Bay
1
(1) 4 May HMS Sheffield
(2) 11 May ARA Islas De Los Estados
(3) 21 May HMS Ardent
(4) 23 May MV Rio Carcarana
(5) 23 May HMS Antelope
(6) 25 May HMS Coventry
(7) 8 Jun RFA Sir Galahad

FIGURE 3. FALKLAND ISLANDS
APPROXIMATE POSITIONS OF SHIP SINKINGS AND PRINCIPAL SETTLEMENTS

12 June: HMS GLAMORGAN was hit by a land-based EXOCET missile and suffered moderate damage.

13 June: British troops began a heavy attack against Argentine positions.

14 June: British forces reached the outskirts of Stanley. Most of the high ground surrounding Stanley was soon captured. General Menendez requested a cease-fire and later met with the deputy commander of the British ground forces and surrendered at 2000 EDT.

3. LESSONS OF THE FALKLANDS

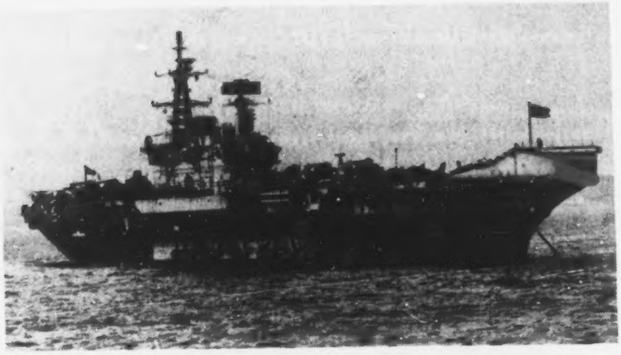
Since World War II, the United States Navy and Marine Corps have played a vital role in supporting U.S. foreign policy in more than two hundred crises and confrontations. In addition, the Navy and the Marine Corps have fought in the Korean War and Vietnam War. In general, U.S. naval superiority and the availability of carrier task forces have made U.S. operations relatively immune to enemy interference during this period. However, the transfer of advanced weapons to the Third World and the growth of Soviet naval forces during the past two decades have increased the potential threats to U.S. naval forces in future conflicts.

There are many ways to prepare for these threats--exercises, war games, studies, intelligence collection, etc. But there is no substitute for actual combat experience, and the Falklands conflict provides a number of actual combat situations that deserve examination. The conflict in the Falklands included:

- The first use of modern cruise missiles against warships of a major navy.
- The first time since World War II that sustained air attacks were made against naval forces.
- The first use of nuclear-powered attack submarines in combat.
- The first known use of Vertical/Short Take-off and Landing (V/STOL) aircraft in combat.

Further, the Falklands conflict lends itself to effective analysis because of (1) the limited duration and geographic area of the conflict, (2) the isolated region in which the conflict took place, (3) the clear military objectives of both sides, (4) the absence of direct third-party involvement, and (5) the nonparticipation of paramilitary or terrorist forces. However, these factors also limit the analysis in some respects because such separation and clarity rarely have been present in recent conflicts. Indeed, the political and military complexity of potential crises and conflicts in which the United States may become involved demand a large, versatile, and highly capable Navy and Marine Corps.

This report focuses on British naval operations and related air activity because the Royal Navy and Royal Marines were forced to deploy major sea, air, and ground forces for a sustained period at considerable distances from home bases. This is similar to the U.S. Navy's operational requirements. Prior to the arrival of the British surface fleet, in the beginning of May, the Argentine Navy deployed four separate surface task groups. The southernmost of these included two destroyers and the cruiser GENERAL BELGRANO, which was sunk on 2 May by torpedoes from HMS CONQUEROR. Two Argentine submarines deployed; A.R.A. SANTE FE was destroyed by British



The V/STOL carrier HERMES, at 28,700 tons full load, is the largest combatant in the Royal Navy. In the Falklands conflict she served as flagship for the British Task Force Commander and initially carried 12 Sea Harriers, plus helicopters.

The 19,812-ton INVINCIBLE is the first of a class of V/STOL carriers being built for the Royal Navy. Originally designed as an ASW or "through deck" cruiser, she deployed to the Falklands with eight Sea Harriers, plus helicopters. Her sister ship, HMS ILLUSTRIOUS, became operational just after the conflict.

forces in the vicinity of South Georgia, and A.R.A. SAN LUIS made one unsuccessful patrol. After 2 May, Argentine Navy surface ships played no significant role in the conflict. Thus, the British Task Force operations and an amphibious landing some 7,000 nautical miles from home bases provide the more-useful data base for this analysis.

This analysis examined how U.S. naval forces could be engaged in a similar conflict. In this regard, the Royal Navy deployed approximately 40 percent of its major surface combatants and virtually 100 percent of its amphibious and logistics support ships to the South Atlantic, including both available V/STOL aircraft carriers. Additionally, a large number of merchant ships was employed in the amphibious, logistics, mine countermeasure, and support roles. The U.S. Navy, in a similar situation, would have sought to employ at least two carrier battle groups (each with one carrier) and a Marine Amphibious Brigade carried in naval amphibious ships plus appropriate submarine and support forces. This is the equivalent of about 15 percent of our carrier strength and almost half of our amphibious lift. The high capability of our forces leads to the conclusion that these forces could successfully prevail against a threat level of the order encountered by the British forces, in considerably less time and with significantly fewer losses.

The following paragraphs describe the major lessons from the Falklands conflict which have direct application to the U.S. Navy and U.S. Marine Corps.

A. Air Operations

Tactical aviation is a vital component of modern naval operations with aircraft providing a variety of combat, combat support, and logistic functions. In the Falklands conflict, land-based Argentine strike aircraft were the principal threat to the British Task Force and amphibious operations. On the British side, ship-based aircraft flew air defense and strike missions, while ship-based helicopters were vital to commando raids, the amphibious landings, antisubmarine warfare, search and rescue, and logistics at sea and ashore. The British also employed land-based aircraft, flying from Ascension Island, for strike, surface surveillance, tanker, and logistic missions. However, the strike and surveillance missions had only a limited impact on the conflict. The tanker and logistic missions, on the other hand, were often vital.

Argentine Air Operations

The Argentine Air Force and Navy began air attacks against the British surface naval forces on 1 May. During the succeeding six weeks, the Argentines flew about 300 sorties against British surface ships and amphibious landings. These sorties were made mostly with 500- and 1,000-pound "iron bombs," but also included rocket and strafing attacks and five EXOCET missiles launched by Super Etendard aircraft, and unguided rockets fired by MB.339 aircraft (the last based in the Falklands, as were some

Sea Harrier V/STOL fighter-attack aircraft were flown by the Royal Navy in air defense, ground attack, and antiship roles in the conflict. Shown taking off vertically with a standard intercept armament of two AIM-9L Sidewinder missiles (plus two 30 mm cannon) and auxiliary fuel tanks, the Sea Harrier was payload limited.

The naval Sea Harriers were later supplemented with Royal Air Force Harrier GR.3 aircraft for the attack role, with both types being able to carry three 1,000-pound bombs or other air-to-ground weapons. Here a Harrier GR.3 prepares to land on HMS HERMES, with a Sea King MK.5 in the background.

Pucara and T-34 aircraft). Canberra and Pucara aircraft were also flown by the Argentines in the attack role, but apparently without effect.

Argentine Mirage, Skyhawk, and Super Etendard pilots flew strikes against the British Task Force and later the amphibious landings with determination and bravery. However, their efforts were severely limited by having to enter combat almost at their aircrafts extreme unrefueled range. This inhibited their maneuvering and the time available to engage in strikes or air-to-air combat. The Argentine Air Force had a limited in-flight refueling capability consisting of two KC-130 Hercules aircraft plus Skyhawk attack aircraft using the "buddy store" scheme, but only the Navy Super Etendards and Navy and Air Force Skyhawks could be refueled in flight.

British Ship-Based Air Operations

The Royal Navy began air attacks against military targets in the Falklands with carrier-based Sea Harriers on 1 May. Subsequently, Sea Harriers continuously provided air defense for the Task Force and amphibious landings, and carried out strikes against targets ashore. While the HARRIER can take off and land vertically or with very short runs, its payload (i.e., weapons and fuel) is less than that of a comparable conventional aircraft. For example, in the air intercept role the RN Sea Harrier could carry only two Sidewinder missiles plus two 30 mm Aden cannon for a 90-minute mission. The British had no other fixed-wing aircraft that could operate from their two, relatively small, V/STOL carriers, HMS INVINCIBLE and HMS HERMES. The small size of these carriers limited the number of aircraft initially embarked to eight and twelve Sea Harriers, respectively, plus about a dozen helicopters each.

Additional Sea Harriers were deployed to the Falklands to replace losses from the initial carrier squadrons. During the later stages of the conflict RAF Harrier GR.3 aircraft were also deployed aboard the carrier HERMES to provide a strike capability to support ground operations. During the conflict the Sea Harriers flew 1,100 air defense sorties and the Sea Harriers and Harrier GR.3 aircraft together flew 215 ground attack sorties. In the latter role, the aircraft carried up to three 1,000-pound bombs or other air-to-ground weapons.

The Harriers flown in the Falklands conflict had a very high availability rate (about 90%), good all-weather flying capability, long ferry range using in-flight refueling, low maintenance requirements, low combat loss rate, but a relatively high accident rate (five operational accidents, none of which were apparently due to aircraft malfunction). This performance, often achieved under adverse weather conditions, was due in large part to the excellence of the Royal Navy and Royal Air Force pilots and maintenance personnel, as well as to the basic simplicity and soundness of the Harrier design. It was not designed to provide air superiority and did not protect U.K. forces from attack.

The British operated helicopters from the two aircraft carriers, as well as all destroyers, frigates, amphibious ships, and most auxiliary ships. Four converted merchant ships served as transports and holding spots for Harriers and helicopters awaiting space aboard the carriers or secure facilities ashore. The British helicopters performed a multitude of important tasks, including missile strikes against small surface ships and a surfaced submarine. Several helicopter crews distinguished themselves in supporting Special Operations, flying at night and in low-visibility conditions, including a blizzard at South Georgia. The ship-based helicopters, including Marine and Army light helicopters and a single RAF CHINOOK, flew more than 10,000 sorties during the conflict.

British Land-Based Air Operations

Flying from Ascension Island, the RAF undertook a total of five Vulcan bomber missions against the Falklands: three single-plane strikes with each Vulcan carrying 21 1,000-lb bombs for runway attack, and two single-plane strikes with antiradar missiles intended to destroy Argentine radar installations in the Falklands. Each Vulcan flight required several in-flight refuelings. The strikes were unable to put the airfield at Stanley or the surveillance radars out of service. In addition to the Vulcans, RAF Nimrod maritime patrol aircraft flew surface surveillance flights from Ascension, and Hercules cargo aircraft air-dropped critical supply items to the British forces off the Falklands. These flights, and HARRIERS being flown to the carriers in the South Atlantic were refuelled in flight by RAF Victor tankers based at Ascension Islands.

Issues and Lessons

Argentine, as well as British air operations were severely hampered by the long distances to the objective areas. The Argentine Navy's aircraft carrier 25 DE MAYO was not yet able to operate the newly arrived Super Etendard aircraft, while the drawdown of the British fleet in the 1970s had left the Royal Navy with only two small V/STOL carriers (plus two more V/STOL carriers under construction).

If the United States were to require tactical air operations at a similar distance from friendly bases, the U.S. Navy could provide large numbers of fighter and attack aircraft from its large-deck aircraft carriers. These ships operate some 80 high-performance combat aircraft, several times the number aboard the small British carriers and of far greater combat capability than the HARRIERS. The F-14 Tomcat, on board most U.S. carriers, is one of the best-performing fighter aircraft in service today, while the F-14's Phoenix, Sparrow, and Sidewinder missiles, and 20 mm Gatling cannon make it the most heavily armed fighter of any nation. Similarly, the A-7 Corsair and A-6 Intruder attack planes on board U.S. carriers provide an effective day/night striking force able to deliver heavy weapon loads with high accuracy.

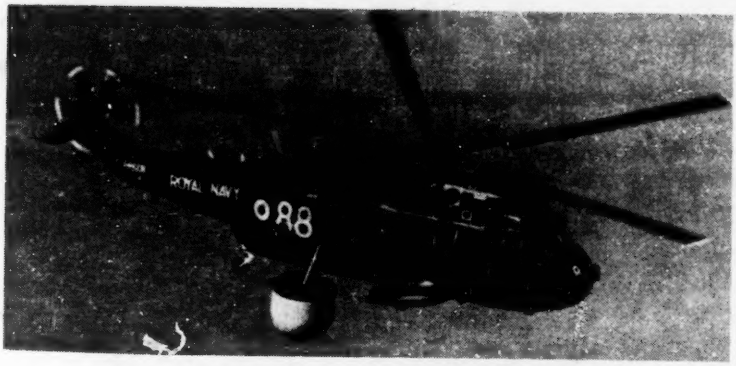
The U.S. Navy's large deck carriers have two additional significant advantages over the smaller British carriers; sustainability and survivability. A large carrier has far more endurance than a small one, with much greater capacity for ship and aircraft fuel, ordnance and spare parts. In the Falklands, both British carriers had their flight decks encumbered with stacks of bombs, missiles, and fuel tanks which could not be stored in the ships' magazines. This situation made them very vulnerable to Argentine aircraft attack. In contrast, nuclear-powered U.S. carriers not only have virtually unlimited steaming endurance, they also carry thousands of tons of munitions and months' worth of spare parts for all of their embarked aircraft. Additionally, U.S. carriers have extensive on-board repair capabilities which cannot be provided on a small carrier.

The smaller carriers deployed by the U.K. are far more vulnerable to complete loss from torpedo, missile, or bomb attacks than are U.S. carriers, because they lack the multiple hulls, armor plate and redundant damage control systems which are inherent design characteristics of those ships. The survivability of the large carrier was nowhere better demonstrated than in the tragic accident aboard U.S.S. Enterprise in the late 1960s. Nine 500 pound bombs exploded on the ship's flight deck, and 32 aircraft were destroyed or disabled. Despite this damage, Enterprise could have launched a major air strike within two hours after the accident, and could have continued to operate with no significant reduction in offensive or defensive capability as long as necessary. No other class of combatant ships in the world today with the exception of Iowa class battleships, has that ability to absorb damage and keep on fighting.

The contributions by British land-based combat aircraft from Ascension were minimal, despite the great skill with which they were carried out. However, the use of Ascension-based Hercules transports to airdrop supplies to the Task Force and the use of Victor tankers for in-flight refueling of Harriers and Hercules were important to the success of the operation. (Some Hercules were also hastily modified and employed as tankers.)

Falklands conflict and the U.S. Navy's Indian Ocean operations have underscored the importance of these modifications.

The outstanding performance of the Harrier under very arduous combat conditions demonstrates the correctness of this Administration's decision to procure for the U.S. Marine Corps the AV-8B variant of the Harrier, which has double the range and payload of those used by the British.



The urgent British need for Airborne Early Warning (AEW) aircraft led to the modification of Sea King MK.5 helicopters to carry the Searchwater radar, as shown in this view. Two of the helicopters arrived in the Falklands aboard the carrier ILLUSTRIOUS just after the conflict.

A Super Etendard of the Argentine Navy's 2nd Attack Squadron, which made the Exocet strikes on the British Task Force. The aircraft were intended to operate from the Argentine light carrier 25 DE MAYO, but the ship was not ready for service when the war began.

B. Antiair Warfare/Antiship Missile Defense

Antiair Warfare (AAW)

The British Task Force, and subsequently the amphibious landings, were defended by Sea Harrier V/STOL aircraft in the fighter role, as well as area and short-range defensive systems--the last including both "hard kill" (guns and missiles) and "soft kill" (chaff).

The British felt very keenly the lack of an Airborne Early Warning (AEW) capability in the South Atlantic. The Argentines, aware of this deficiency, made their air attacks at low level, below ship radar horizons, preventing the British from detecting or engaging them prior to their arrival in the target area. The Royal Navy has since developed and deployed a limited helicopter-borne AEW capability.

As noted above, within the limits of their capabilities, the Harriers had some success in the air-to-air role, despite their weapon system and endurance limitations, flying mostly daytime air defense sorties from the two carriers. They used AIM-9L Sidewinder missiles to shoot down 16 Argentine aircraft (plus one probable) and their 30 mm Aden guns to destroy another four aircraft (plus two probables). However, the Argentine planes were vulnerable because they were operating at almost their maximum range, without the support of Electronic Countermeasures (ECM), and using mostly "iron bombs" that required the attacking aircraft to fly close-in to their targets. No Harriers were lost in air-to-air combat (See Appendix C for combat loss data.) Argentine bombing attacks caused the loss of four ships, while 16 others were damaged by bombs, rockets or strafing.

The area-defense missile system in British warships was the Sea Dart, fitted in seven ships present in the Falklands. The Sea Dart is credited with eight aircraft kills.

After British troops were established ashore, they employed Rapier, Blowpipe, and Stinger antiaircraft missiles for defense against Argentine air attacks. The Rapiers were particularly effective, being used with optical rather than radar control. (The Stinger missiles were used by Special Forces teams.)

Antiship Missile Defense (ASMD)

Seventeen British ships were fitted with the Sea Cat and three with the Sea Wolf short-range missile systems. These weapons destroyed eight and five Argentine aircraft, respectively. More than ten Sea Cat missiles were launched for every kill, but the Sea Wolf was particularly effective, with five kills for only six launches. (There were no opportunities to use the Sea Wolf against incoming Exocet missiles.) Again, the effectiveness of British AAW was enhanced by the Argentines' lack of jamming and other ECM techniques, the Argentine use primarily of "iron bombs," and the relatively small Argentine raid size. Close-in "soft-kill" missile defense in the British force consisted of chaff launched from surface ships and dispensed from ship-based helicopters.

Although the Argentines fired five Exocet missiles from aircraft and two from a shore launcher in the Falklands, they hit three ships, destroying two, for a high launch-to-hit ratio. The missiles, with relatively small, 360-pound warheads, not more than one of which is believed to have detonated, caused fires which led to loss of the destroyer SHEFFIELD and the aircraft-carrying container ship ATLANTIC CONVEYOR, and damaged another destroyer, HMS GLAMORGAN.

Issues and Lessons

The British were sorely pressed to defend against Argentine air attacks. Despite severe limitations of the attacking Argentine forces and the few Exocet missiles launched, British casualties were significant. This is both a tribute to the Argentine attackers and acknowledgement of the limitations of the British AAW and ASMD systems. The British force lacked defense in depth, which requires at least AEW aircraft, shipboard three-dimensional (3-D) air search radars, integrated shipboard combat direction, and all-weather fighter aircraft that can maintain sustained, long-range air patrols. Figure 4 illustrates Royal Navy Task Force AAW defenses established to counter Argentine air attacks against the main body of the Task Force. Also, the number and capabilities of British missile and ECM systems were limited, and no Close-In Weapon Systems (CIWS) of the Gatling-gun type--to provide terminal defense against incoming missiles--were fitted in their ships. (British shipboard guns were credited with several aircraft kills; see Appendix C. Shipboard guns and small arms fire were also credited with deterring attacking Argentine pilots.)

Facing a similar air/antiship missile threat, the U.S. Navy would employ a number of systems in the "defense in depth" concept. First, each U.S. carrier has four E-2 Hawkeye AEW aircraft, which can provide around-the-clock and around-the-compass early warning of hostile air attacks and control defending fighters. Second, the long-range weapons/radar capability of the F-14 Tomcat provides the opportunity for early intercept of attacking planes. Third, the U.S. Navy's missile cruisers and destroyers are all fitted with 3-D radars and, increasingly, the new series of Standard missiles which provide significantly greater capability than RN ship-launched missiles. Upgrades to the Standard missile's guidance and fuzing systems are being developed to give the missile even greater capability against sea-skimming antiship missiles.

Fourth, the Navy is providing all battle-force ships with close-in defenses: The Sea Sparrow missile is carried in some destroyers, frigates, and aircraft carriers; and almost all important combatant ships are being provided with the Phalanx CIWS. This "last ditch" defense system can fire several thousand rounds per minute and tracks both the incoming missile and rounds in flight to provide a very high probability of kill. For soft kill, all battle-force ships are being fitted with the AN/SLQ-32

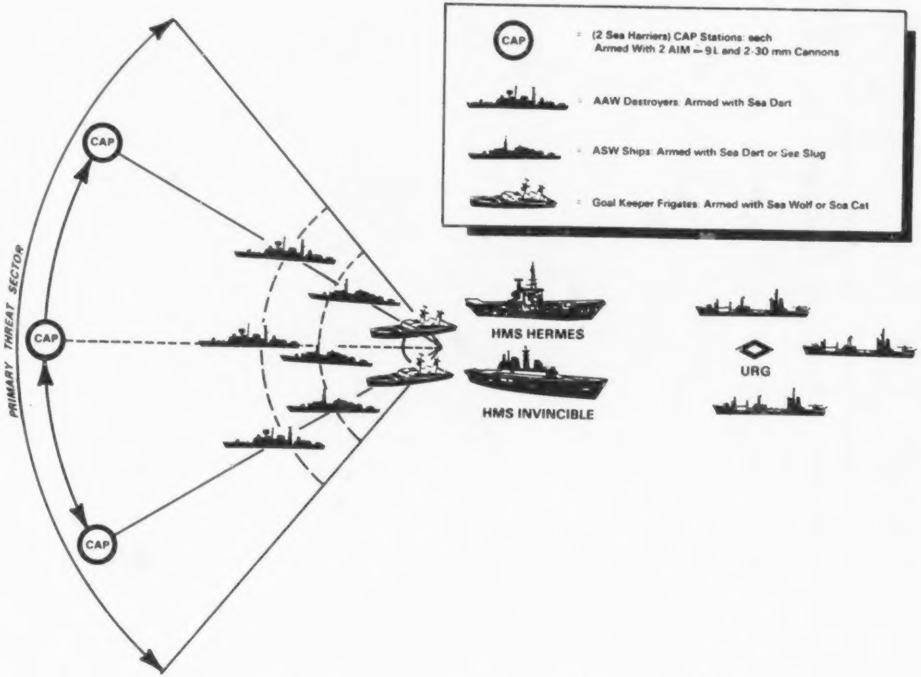

CAP = (2 Sea Harriers) CAP Stations: each Armed With 2 AIM – 9L and 2·30 mm Cannons
= AAW Destroyers: Armed with Sea Dart
= ASW Ships: Armed with Sea Dart or Sea Slug
= Goal Keeper Frigates: Armed with Sea Wolf or Sea Cat
PRIMARY THREAT SECTOR
CAP
CAP
CAP
HMS HERMES
HMS INVINCIBLE
URG

FIGURE 4. STANDARD TASK FORCE AAW FORMATION

ECM system (except the AN/SLQ-17 in carriers) and chaff/decoy launchers. The SLQ-32 can detect hostile missile guidance radars. Through jamming and deception, and by controlling chaff/decoy release, it can be a vital element in defending against missile attacks. To increase the effectiveness of chaff dispersal, an air launch Chaff System is currently being procured for use on Naval aircraft. Airborne ASMD electronic jamming systems are also being developed to complement ship based systems.

Taken together, this defense-in-depth should afford protection to our battle groups and to the amphibious forces or merchant convoys under their protective umbrella. The Falklands conflict did identify some potential problems in countering Western-produced missiles, because U.S. systems are oriented toward Soviet antiship missiles. Expansion of existing soft-kill ASMD systems to counter this threat is in progress.

C. Antisubmarine Warfare (ASW)

Argentine Antisubmarine Warfare (ASW)

The only known Argentine ASW effort was against the British nuclear-powered submarine CONQUEROR after she torpedoed the cruiser GENERAL BELGRANO. The two Argentine destroyers with the cruiser were modernized World War II-built ships fitted with modernized AN/SQS-29 series sonars. After the CONQUEROR's attack, the destroyers dropped depth charges as they left the scene of the sinking, but without effect.

British Antisubmarine Warfare

Only two Argentine submarines made major patrols during the conflict, one relatively new, German-built Type 209 diesel-electric submarine (completed 1974) and one former U.S. GUPPY-type submarine of World War II construction. Early in the conflict the GUPPY-type submarine SANTA FE was attacked while on the surface off South Georgia by British ship-based helicopters. The submarine was badly damaged and subsequently beached. (On that day, 25 April, South Georgia was retaken by the British.)

The main British Task Force was located and attacked without success by the Type 209, SAN LUIS. That submarine was at sea, and at times in the area of the British force, for an estimated 36 days. The threat from Argentine submarines was a continuous concern for the British Task Force commander, and numerous attacks were made against suspected submarine contacts, with a large number of ASW weapons being expended. In any event, SAN LUIS survived all British ASW efforts, but at the same time was unable to inflict damage on the British force because of materiel problems (see Section 3.Q).

Another ASW consideration was the long British supply line from the United Kingdom to Ascension and then south to the Falklands. Of particular concern was the line of tankers, vital to sustain British fleet operations, and the tankers in various refueling areas. The British were

Nuclear-powered attack submarines like HMS CONQUEROR had a major role in British strategy in the conflict. These submarines permitted the British to establish "exclusion" zones around the Falklands, and then off the Argentine coast, to deny those waters to Argentine surface ships.

The Argentine GUPPY-type submarine SANTIAGO DEL ESTERO and destroyers in port after the Falklands conflict.

fortunate in that the Argentines were unable to attack this Sea Line of Communication (SLOC); had they done so, the British would have required additional escort ships, as well as other ASW forces.

Issues and Lessons

Argentine and British ASW forces were unable to destroy any of the opposing submarines except for the Argentine SANTA FE, caught on the surface and severely damaged by depth charges and AS-12 missiles launched from helicopters. While Argentine ASW efforts were completely ineffective, British ASW activities may have deterred Argentine submarine attacks.

Both navies were inhibited by their ASW sensors and weapons. In addition, the water conditions in the Falklands area were very poor for acoustic detection. Finally, the Task Force operating area was too far from British bases for the effective use of land-based ASW aircraft and no ship-based fixed wing ASW aircraft were available to supplement British ASW helicopters.

U.S. naval forces involved in a similar conflict would have the advantages of carrier-based S-3 Viking fixed-wing ASW aircraft, which could be projected into the submarine threat area to complement the efforts of ship-based ASW helicopters. In addition, large numbers of U.S. cruisers, destroyers, and frigates have high-powered active sonars and towed, passive acoustic arrays which would have been more effective in the Falklands environment. British employment of shipboard torpedo countermeasures systems verifies current U.S. Navy programs to improve our capability in this area.

The British expended ASW ordnance at a higher rate than planning factors had indicated. This fact, and the anticipated high expenditure rates of air-launched sonobuoys in some scenarios, are of particular concern to the U.S. Navy. The U.S. Navy's continued review of combat sustainability now includes the Falklands experience.

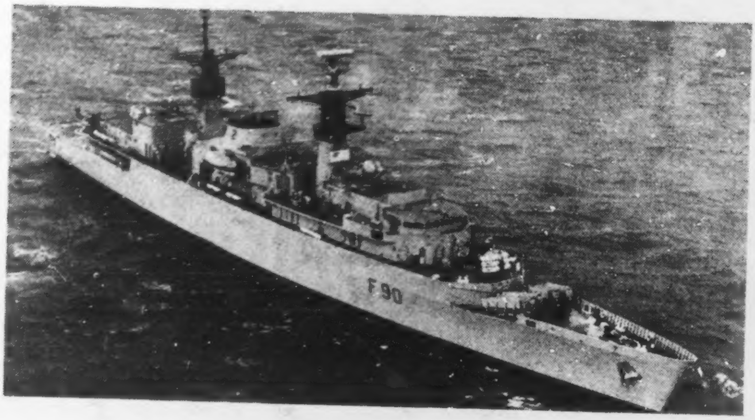
D. **Antisurface Warfare** (ASU)

Argentine Antisurface Warfare

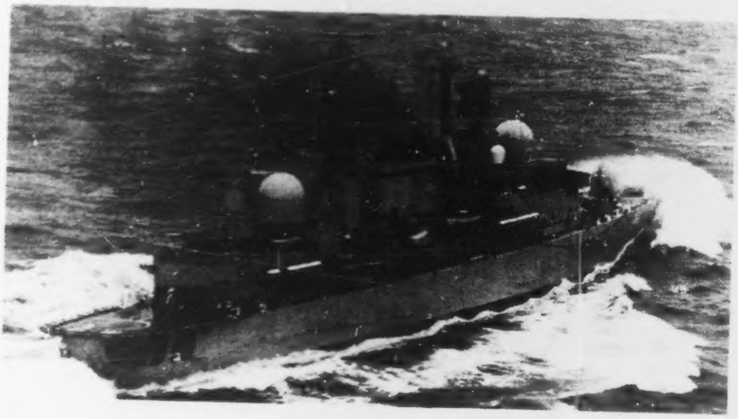
The Argentine efforts to attack British surface ships consisted primarily of air strikes, limited submarine operations, and the early, ill-fated sorties by surface task groups. Only the Argentine air strikes, described above, were successful.

British Antisurface Warfare

Several Argentine ships were sunk or damaged by British forces. Of special note was the use of antitank rockets by Royal Marines on South Georgia to damage an Argentine corvette, and attacks by naval Lynx helicopters with Sea Skua air-to-surface missiles against several Argentine surface ships, as well as the helicopter attack against the surfaced submarine



HMS BRILLIANT is representatiave of the newest frigate class in British service. The Type 22 ship has highly effective Sea Wolf surface-to-air missile launchers forward and aft and four Exocet antiship missiles in cannisters forward. She also carries ASW torpedo tubes and two Lynx helicopters.



HMS GLASGOW is a Type 42-class destroyer, sister ship to HMS SHEFFIELD. The ship has a Sea Dart missile launcher and 4.5-inch gun mount forward, with ASW torpedo tubes and a Lynx helicopter for ASW. This is the newest destroyer class to enter British service.

SANTA FE. The Sea Skua missile, which had not been certified for fleet use at the start of the conflict, is known to have scored at least four, and possibly as many as eight, hits for the eight missiles fired. In addition, RN Sea Harriers sank an Argentine trawler trailing the Task Force, and a British frigate sank an Argentine supply ship in Falkland Sound with gunfire.

Issues and Lessons

The Falklands conflict provided very limited data on antisurface ship operations. The sinking of the GENERAL BELGRANO by a British submarine and the British concern over the threat from Argentine submarines confirm that undersea craft can be highly effective in the ASU role. The use of a torpedo designed over a half a century ago to sink BELGRANO provides a graphic illustration of the potential value of seemingly "obsolescent" munitions.

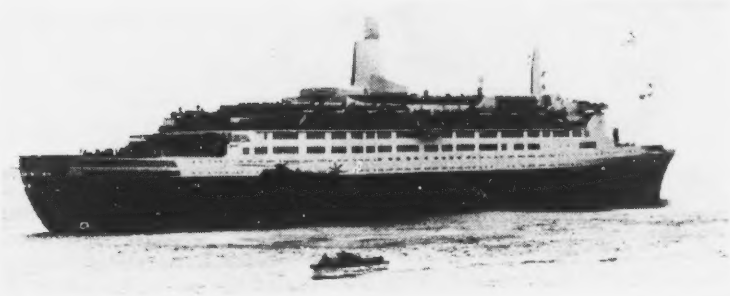
Additionally, the British use of ship-based helicopters in the antiship role has led the U.S. Navy to reconsider the role of the helicopter in ASU. The U.S. Navy uses ship-based LAMPS helicopters in the Over-the-Horizon (OTH) targeting role for ship-launched missiles. There also may be merit in arming these helicopters with antiship weapons in certain situations.

E. Amphibious Warfare

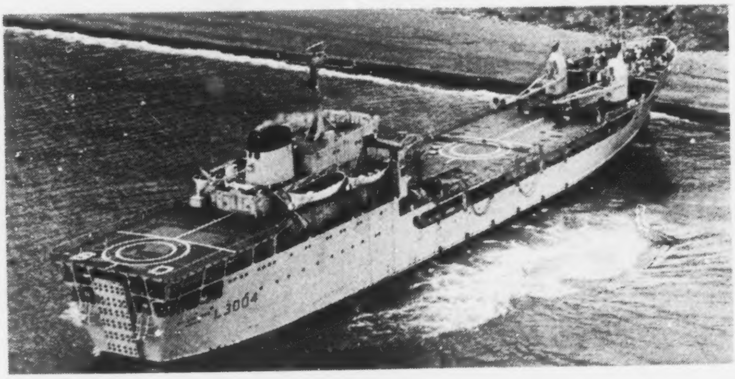
The objective of the British "Operation Corporate" was to recapture the Falklands, South Georgia, and South Sandwich islands. The major amphibious operation was in the Falklands. The British landing forces, consisting of Royal Marines and British Army soldiers, were carried to the Falklands in a small number of specialized amphibious ships of the LSL and LPD type, and converted passenger liners and passenger/vehicle ferries.

Through careful planning, skill, and good fortune, the main landings at San Carlos were carried out with little initial opposition. The landings, begun in darkness at 0340 local time, were carried out by 16 landing craft carrying troops and equipment from the ships offshore to the beach. At dawn ship-based helicopters joined in the shuttle of weapons and supplies to the beach. The British beachhead was firmly established when Argentine air raids began in the afternoon. The later amphibious landings at Fitzroy, unlike the San Carlos landings, were initially conducted unopposed under night and poor-visibility conditions. When the weather did clear, two unescorted and nearly unarmed amphibious ships were severely damaged in air attacks, one later having to be scuttled.

The Falklands landings demonstrated the continued viability of amphibious operations. The significant aspects of the landings included: (1) the British ability to come ashore in undefended areas through the use of deception and prior intelligence, (2) major Argentine air opposition during the landings, (3) the British reliance on merchant shipping as well



The luxury liner QUEEN ELIZABETH II, one of 50 merchant ships pressed into service during the Falklands conflict, helped to compensate for a shortage of amphibious shipping as the British sought to move 10,500 troops to the South Atlantic.



The logistics landing ship (LSL) SIR BEDIVERE is similar to the SIR GALAHAD and SIR TRISTRAM, which were used in the Fitzroy landing in the Falklands. These ships did not beach in the Falklands, but unloaded troops and equipment by helicopter and by landing craft.

as specialized amphibious ships, (4) the extensive use of Naval Gunfire Support (NGFs) by British warships, (5) the British shortage of assault landing craft and heavy-lift helicopters, and the lack of adequate helicopter deck spots aboard ships, and (6) cargo offloading difficulties (see Section 3.J).

Issues and Lessons

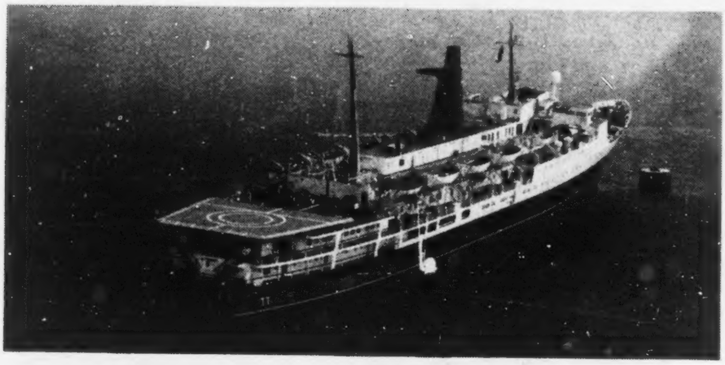
The British landings were initially only lightly opposed, in part because of deception and prior knowledge of the location of Argentine forces. SAS and SBS units carried out raids to confuse the enemy as to the nature and location of the British landings. Although such tactics are preferred to opposed landings, in some situations there is no alternative to having the capability of landing troops against opposition. The U.S. Navy and Marine Corps have developed the tactics, equipment, and weapons necessary to undertake opposed landings.

The British experience demonstrated that amphibious shipping can survive against air attacks, although not without losses. The presence of adequate early warning of air attacks, airborne and shipboard defense, and effective self-defense weapons in the amphibious ships would have substantially reduced losses. Most of the merchant ships employed to carry troops and material into the Falkland Sound mounted at best only a few light guns. The two large RN assault ships of the FEARLESS class did have SEA CAT missiles and 40 mm guns, as well as passive ECM (including chaff), but the smaller logistic landing ships had only light guns installed.

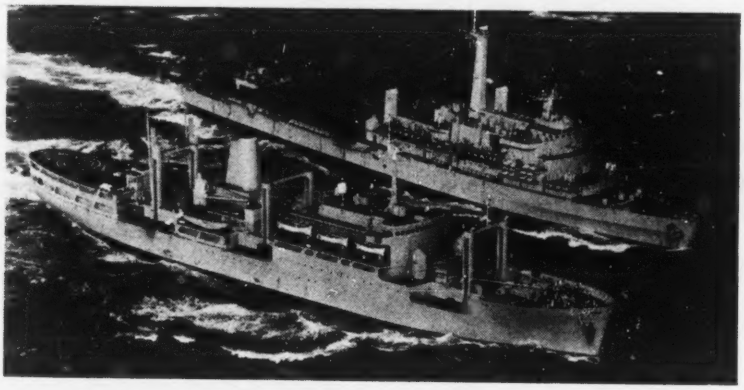
The U.S. Navy's amphibious ships, which are armed and are being fitted with chaff and variants of the SLQ-32 ECM system, could be expected to have a significant capability against the same level of threat. Further investigation is warranted on the issue of providing "bolt-on" self-defense systems for merchant ships that may be called upon to support U.S. amphibious operations.

At the start of the Falklands operation, the Royal Navy had only eight amphibious ships available--two dock landing ships (LPD type) and six logistic landing ships (LSL type). With a requirement to lift more than 10,000 troops to the Falklands, the British were forced to employ a large number of merchant ships, including the large passenger liners QUEEN ELIZABETH II and CANBERRA. The British ground forces also included light armor, artillery, and antiaircraft batteries as well as large stocks of munitions, specialized equipment, and provisions for an extensive ground campaign. It is apparent that commercial shipping is not a substitute for specialized amphibious shipping.

The U.S. Navy currently has several times the British amphibious lift, with 60 active amphibious ships, all significantly larger than comparative British types, plus four ships in the Naval Reserve Force (NRF). (This does not include the merchant-type ships assigned to the Maritime Prepositioning Program.) The total U.S. lift capacity is approximately



The passenger/vehicle ferry RANGATIRA shows her military features in this view: A helicopter platform has been fitted aft, the antenna dome for maritime satellite communications is installed forward, and 20 mm Oerlikon antiaircraft guns have been installed amidships and forward.



The amphibious assault ship HMS FEARLESS during an underway replenishment from the Royal Fleet Auxiliary STROMNESS. HMS FEARLESS and her sister ship HMS INTREPID are Britain's only multipurpose amphibious ships, being fitted with helicopter facilities and a docking well for landing craft.

44,000 troops or one Marine Amphibious Force (MAF), divided about equally between the Atlantic and Pacific Fleets. The current five-year defense program plus the ships already under construction will add nine ships to this force by about 1990. Although several older amphibious ships will be retired in that period, there will be a net gain in ships and the newer ships will have increased capability.

Seventeen British destroyers and frigates in the Task Force were armed with a total of 21 4.5-inch guns. The 14 ships that participated in NGF missions fired approximately 7,900 rounds of ammunition. This fire supported friendly troops, suppressed enemy fire, destroyed enemy supplies and aircraft on the ground, and seriously hurt the morale of the defenders. The British were limited by gun caliber and hence hitting power and range. The U.S. Navy currently has a large number of 5-inch guns in the fleet and the planned recommissioning of the four battleships of the IOWA class will provide significantly more-capable 16-inch guns for NGF in support of amphibious operations. President Reagan recommissioned the first of these ships, the NEW JERSEY (BB-62), on 28 December 1982, and the second, the IOWA (BB-61), will rejoin the fleet in early 1984. Each Battleship can deliver the naval gunfire support equivalent of 20 DD-963 destroyers. Figure 5 illustrates the difference in NGFS ordnance delivery capability between a Battleship and a DD-963. The Battleship can deliver 803 tons of 16-in and 5-in rounds in a space of only 30 minutes while a DD-963 can deliver only 42 tons of 5-in rounds during the same time period. The Battleship carries more than 7000 rounds of ammunition in its magazines as compared to 1200 rounds for a DD-963. The 23 mile range of the Battleship's 16-in guns is significantly greater than the 13 mile range of a DD-963.

SHIP	SALVO RATE/ MIN	ROUNDS ON TARGET AFTER 30 MINUTES	ORDNANCE DELIVERED (TONS)	REMAINING MAGAZINE CAPACITY (ROUNDS)	MAXIMUM RANGE (MILES)
BATTLESHIP					
16" 50	18	540	729	680	23
5" 38	90	2,700	74	3,300	10
		3,240	803	3,980	
DD-963 DESTROYER					
5" 54	40	1,200	42	0	13

FIGURE 5. COMPARATIVE NGFS ORDNANCE DELIVERY CAPABILITY

The British were limited in the landings by the lack of helicopter landing spots on ships. Throughout the operation there was a severe shortage of heavy-lift helicopters, due in part to the destruction of three of the four available Chinook (8-1/2 ton capacity) helicopters when the ATLANTIC CONVEYOR was lost. U.S. amphibious operations would have considerably more landing craft, amphibious tractors, and helicopters available, including several of the new CH-53E Super Stallion helicopters (16-ton capacity). Also, the first of a series of 50-knot air cushion landing craft (LCAC) are under construction.

The British faced several problems in moving men, supplies, and equipment to the Falklands, among them the shortage of amphibious shipping and difficulties in the order that materiel was loaded aboard ship in the United Kingdom and unloaded in the assault area. A similar U.S. operation would rely primarily on amphibious ships that are configured for "combat loading" of materiel. A U.S. Navy shortage of amphibious lift for "cube" materiel (munitions, provisions, etc.) is being corrected with the recent shift of two amphibious cargo ships (LKA) from the Naval Reserve Force (NRF) to the active fleet, with two more NRF ships scheduled to return to the active fleet early in 1983. With respect to total shipping, as noted above, we plan to significantly increase the capability of our amphibious fleet by 1990. At the same time, there is a program to ensure certain merchant ships laid up in the National Defense Reserve Fleet can be rapidly returned to service. The current five year plan will also increase the Ready Reserve Force fleet of merchant ships from 29 to 77.

All analyses of the Falklands, as well as potential amphibious operations which U.S. forces may be called upon to carry out, indicate that specialized amphibious ships are absolutely essential for amphibious assault, because of their rapid offload capability, survivability, and ability to lift specialized military equipment.

Finally, the prepositioning of U.S. Marine supplies and equipment in Norway and in specialized merchant-type ships in the Indian Ocean will permit the more rapid deployment of Marine combat units to those regions.

F. Command, Control, and Communications

The British force, operating more than 7,000 nautical miles from its bases, was in continuous communication with fleet headquarters at Northwood, near London. This was accomplished primarily through satellite links, which were fitted to the warships and submarines, as well as most of the merchant ships used in Operation Corporate. British communications in general proved to be highly reliable throughout the conflict.

Both the British and Argentines lacked secure tactical communication systems and were able to obtain important tactical information through the intercept of the other's tactical transmissions. Another consideration was the large amount of message traffic transmitted between London and the

British Task Force Commander. This volume of traffic taxed the limited resources, both staff and facilities, in the flagship, HMS HERMES.

Issues and Lessons

The U.S. Navy has an extensive and highly capable satellite communications system with HF backup. The Soviet development of antisatellite systems makes it mandatory that the U.S. Navy continue to maintain a viable HF backup capability and explore new concepts to provide reliable, secure, and rapid worldwide communications.

Communications Security (COMSEC) is a vital concern for naval forces. In general, superior secure communications are available to U.S. naval forces in comparison to those found in British warships. The U.S. Navy can achieve a higher degree of COMSEC during contingency and wartime operations. The E-2 AEW aircraft and other systems in the carrier battle group permit airborne radio relay using secure, line-of-sight communications links to battle group units, which reduces the probability of communication signal exploitation and limits the value of enemy use of direction-finding techniques.

The high volume of communications experienced in the Falklands is also of concern to U.S. Naval commanders. Despite the importance of such traffic, it can overload the on-scene commander and his staff. This situation must be carefully reviewed at every level of naval and higher chains of command, and efforts should continue to reduce staff workload and the amount of time Battle Group and fleet commanders are "on the horn."

G. Electronic Warfare (EW)

The Argentine and British forces made minimal use of electronic warfare techniques, due primarily to the limited equipment available to the engaged forces.

Issues and Lessons

During the same period as the Falklands conflict, Israeli air and ground forces made a highly successful assault against Syrian air defenses in southern Lebanon. The Israeli success in destroying the air defenses with minimal losses again demonstrated the significance of sophisticated EW tactics and equipment in modern warfare. Thus, the U.S. Navy views the limited use of EW techniques in the Falklands as an abnormal situation. This is especially true in view of the very heavy emphasis that the Soviet armed forces place on EW activities.

Several components of the U.S. naval forces are dedicated to the EW issue, among them the carrier-based EA-6B Intruder, and the SLQ-32 and SLQ-17 shipboard systems. All aspects of electronic warfare (including COMSEC, referred to above) are receiving increasing special emphasis in the U.S. Navy.

H. Intelligence

Next to personnel, the most important determinant of the battle outcome appears to have been intelligence. From a variety of technical and other sources, the British forces had available to them substantially better information regarding Argentine force levels, deployments, tactics and intentions than had the Argentine forces about those of the U.K. Some knowledgeable observers go so far as to say that without that substantial intelligence edge, the outcome would have been reversed.

The Argentine and British forces were hampered by their lack of intelligence about their opponent's intentions and available combat forces. For example, the Argentines greatly underestimated the speed with which the Royal Navy could deploy a large military force to the South Atlantic and the capabilities of that force; similarly, the British underestimated the size of the Argentine forces in the Falklands.

However, the British forces were well served by tactical intelligence collection activities of the Special Air Service (SAS) and the Special Boat Squadron (SBS). SAS and SBS units were landed in South Georgia and the Falklands by air and sea to obtain up-to-date information on enemy dispositions and the general situation in South Georgia and in the Falklands. They were able to get this information back to the appropriate commanders in a timely manner, so that operational decisions could be made using the most recent information available. These units also carried out sabotage and deception missions.

Issues and Lessons

In recent years the British armed forces have concentrated their intelligence collection and analysis against the Soviet Union and the other nations of the Warsaw Pact. Although the United States has farther-ranging intelligence interests, including the Middle East, Southwest Asia, and Far East, there are limitations to U.S. intelligence collection and analysis activities. These constraints do not reflect a lack of interest or technical capabilities as much as they do fiscal limitations and the need to establish priorities.

The Falklands conflict again emphasizes the need for the continued United States awareness that crises and potential conflicts can occur in any area of the world. Intelligence collection, analysis, and dissemination are vital to U.S. diplomatic and military readiness and success. This lesson of the Falklands conflict cannot be overemphasized.

I. Environmental Conditions

The weather appeared to have had little influence on British Naval or air operations, except that overcast conditions periodically prevented air operations. Surface ships were able to operate in heavy seas with little, if any, reduction in operating tempo. This was particularly

A Wessex helicopter lifts supplies from a support ship to a carrier during underway replenishment operations in the South Atlantic. Royal Navy helicopters, along with a few RAF machines, performed a wide variety of important missions in the Falklands conflict.

Merchant tankers were essential to British success in the Falklands campaign, fought more than 7,000 nautical miles from bases in Britain. A chain of tankers, like the BRITISH TAMAR, shown here fueling HMS FEARLESS, stretched far into the South Atlantic to make up for a shortfall in naval oilers.

true of the V/STOL aircraft carriers, which operated in conditions of very high seas and low visibility. The British were hampered by the limited weather forecasting information available in the region after Argentina ceased to provide mainland weather data to the international weather system. The temperature was not low enough to cause ice accumulation on ships, although on occasion the wind chill factor was very low.

The Royal Navy, long believed to be the best equipped and trained Navy in the Free World in the field of shallow water ASW, was unable to successfully localize and destroy the Argentine submarine SAN LUIS, known to have been operating in the vicinity of the Task Force for a considerable period. The Falklands experience clearly demonstrates the difficulty associated in shallow waters, an aspect of Naval Warfare which requires increased emphasis in the U.S. Navy. (See Appendix D for a description of the Geography and Climate of the Falkland Islands.)

The environment did, however, have a significant impact on British antisubmarine warfare activities. The Falkland Islands lie on the continental shelf, with the 1000 fathom curve between 50 and 100 miles to the east of the islands. The waters in this area are characterized by large quantities of marine life, including whales, heavy mixing of layers and a rough bottom surface. These factors combined to present a very difficult ASW environment to sonar operators, and forced the Royal Navy to rely on active ASW search tactics.

Issues and Lessons

The Royal Navy is accustomed to winter operations in the North Atlantic, and therefore ships and crews were able to carry on in conditions far worse than those normally experienced by U.S. Navy ships.

J. Logistics/Sustainability

Argentine Considerations

Following their capture of the Falklands, the Argentines poured troops and military supplies into the islands. A considerable stockpile of weapons and munitions was built up. However, the Argentine military command in the Falklands was unable to properly distribute the supplies and weapons; hence troops in the field were critically short of some items that were available in abundance at supply dumps in the Falklands.

After British naval forces reached the area, few supplies were brought in for the Argentine garrison by sea. However, C-130 and other Argentine cargo aircraft were able to deliver supplies at night from the mainland to the airfield at Port Stanley up until the eve of the Argentine capitulation. Only one of those supply aircraft was intercepted and destroyed by the British, while the efforts of ship-based Harriers and Ascension-based Vulcans to close down the airfield at Stanley were unsuccessful.

British Considerations

British naval operations were hampered by the distances from home bases and supply depots, an initial shortage of shipping, and limited stocks of certain materiels. The British used 50 merchant-type Ships Taken Up From Trade (STUFT) in the Falklands conflict. These ships included a variety of merchant types--break bulk, container, roll-on/roll-off, passenger, and tanker, plus several special-purpose ships such as the youth cruise ship UGANDA, which was rapidly converted to a hospital ship. Fuels were the most critical logistic consideration, with nearly one-third of the STUFT being tankers. Most of the merchant ships were rapidly fitted with at-sea (underway) replenishment receiving capability and maritime communication satellite terminals, while 19 ships were additionally fitted to operate helicopters (two of which also carried Harriers). Some merchant ships were also fitted with light guns.

During the main San Carlos landing, it became apparent that commercial ships were not adequate substitutes for dedicated amphibious ships. Commercial ships were easy to load while in the U.K., but they were a major problem when trying to off-load, because of the unavailability of dock facilities and ramps which were not compatible with the landing craft the supplies had to be loaded into. Moreover, on average, only 20 tons per hour of supplies could be off-loaded from commercial ships as compared, to 90 tons per hour from comparable amphibious ships.

During the conflict RAF Hercules aircraft flying from Ascension air-dropped critical items to the Task Force. These aircraft were refueled en route by tanker aircraft from Ascension. RAF tanker aircraft also refueled the Vulcan strikes, the Nimrod surveillance flights, and 22 Harriers flown from Britain to Ascension (four of these were then flown down to ships in the Falklands area).

Ascension Island, approximately halfway between Britain and the Falklands, served as a staging base for British forces. During the conflict the British logistic buildup included the airlifting of 5,800 personnel and 6,600 tons of supplies from the United Kingdom to Ascension, an indication of the magnitude of the shore-based logistics support needed for an operation the size of the Falklands campaign.

The British forces required large quantities of munitions, provisions, fuel, and other supplies for the relatively brief conflict. The intensity of antiair, antisubmarine, shore bombardment, and, once troops were ashore, artillery activity, demanded a continuous flow of supplies. To meet this demand, the British were forced to use stores earmarked for NATO contingencies.

Issues and Lessons

The logistic issues related to the British naval force off the Falklands were in some respects similar to those faced by U.S. naval forces

The container ship ATLANTIC CONVEYOR en route to the Falklands from Ascension with a deck load of Harriers and helicopters. Note the Sea Harrier on the forward landing pad in ready status for an intercept should the ship be attacked. Four British merchant ships were configured to transport helicopters or Harriers.

deployed to the Indian Ocean since 1979. Obviously, the British force was in a combat situation, with munitions, fuels, and other supplies being consumed at a rapid rate; logistic ships were under the threat of hostile attack; and the distance from Ascension to the Falklands is greater than that from Diego Garcia to the U.S. naval operating area ("Gonzo Station") in the northern Arabian Sea.

The fitting of in-flight refueling equipment to the C-2 Greyhound carrier-capable cargo aircraft and procurement of additional planes of this type will improve long-range logistic support for U.S. Carrier Battle Groups.

While the U.S. Navy has developed plans in conjunction with the Maritime Administration to use merchant ships from trade and the Ready Reserve Force, more effort is required to develop aviation, self-defense, and other "naval" systems for merchant ships so employed.[1] The U.S. Navy has developed the Arapaho concept of operating helicopters from a container ship and the Royal Navy is leasing the equipment for at-sea evaluation. (In October of 1982 the U.S. Navy conducted a most-successful although limited at-sea test of Arapaho. These trials were carried out with naval observers from Australia, Canada, Chile, Great Britain, the Netherlands, and West Germany. This is a most promising program.)

Vast quantities of munitions and other consumables are required for sustained combat, and this is a major concern for U.S. planners. The lack of any single item could influence dramatically a conflict's outcome. While not new, this proposition is receiving special emphasis within the Navy Department. Increasing the combat sustainability of fleet and marine units, while ensuring an industrial expansion capacity to produce quantities for war, is one lesson that was relearned and needed.

The vast quantities of munitions used in the Falklands, as well as in other conventional conflicts during the past few years, and the U.S. shortfalls in certain weapon inventories, indicate that older weapons may still be useful. These experiences reinforce our current effort to reevaluate our policy regarding the disposal of older weapons.

K. Mine Warfare

Argentine Offensive Mine Operations

After the Falklands were captured, an Argentine surface ship laid a single minefield off Stanley. The Argentines used moored contact mines of World War I design which, although obsolete in comparison with modern naval mines, still had to be swept or neutralized before British ships could operate in those waters. Had the Argentines placed minefields in Falkland Sound before the arrival of the British force, the landings might have encountered significant delays.

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[1] There are 29 merchant ships in the Ready Reserve Force, ten of which are intended for activation in five days and the remainder in ten days.

British Mine Countermeasure Operations

The Royal Navy has an effective force of minehunters and minesweepers, and has experimented with air cushion vehicles in the Mine Countermeasure (MCM) role. Apprehensive of Argentine minelaying, the British acquired and commissioned five commercial stern trawlers, manned them with naval personnel, and outfitted them with minesweeping gear. These craft were deployed to the Falklands, but until hostilities were over, they were used in the utility and cargo role. Afterwards, they were used with two regular RN minehunters to neutralize the one Argentine sea minefield.

Issues and Lessons

The limited mining capabilities of the Argentine Navy, if used in a timely and effective manner, could have created major problems for the British force. The U.S. Navy had learned the implications of a minor or nonexistent naval power using obsolete mines during the Korean War (1950-1953). The U.S. Navy MCM capability built up in the 1950s has been allowed to deteriorate. Today the Navy has 21 minesweeping helicopters (RH-53D) and three active minesweepers (built in the early 1950s), plus another 18 outdated minesweepers in the Naval Reserve Force.

Major programs are underway to revitalize the U.S. Navy's MCM capability. The MH-53E minesweeping helicopter is being procured and the lead ship of an improved mine countermeasure class, the USS AVENGER (MCM-1), is under construction. A new class of minehunters for U.S. port clearance (MSH-1) is planned. Unfortunately, MCM forces tend to be particularly vulnerable to budget reductions. The Navy will attempt to ensure that the MCM program is completed as now structured.

L. Personnel

The men who planned, fought, and supported operations in the Falklands were the critical factor in the outcome of the conflict. For a number of reasons the men in the Argentine and British armed forces had different backgrounds: The Argentines rely heavily on conscription, while the British armed forces are entirely voluntary; the Argentine armed forces are oriented primarily toward internal security and defending their borders from other South American nations, while British armed forces train and exercise to fight the considerably more powerful Soviet Union, and do so in conjunction with other NATO military services.

Argentine Performance

There were considerable variations in the standard of performance of the Argentine military forces who fought in the Falklands conflict. The Air Force and Navy pilots who flew reconnaissance and strike sorties against the British forces appeared to be of high caliber and were well trained. (Many underwent flight training in the United States.)

Less data are available on the performance of Argentine naval forces. From the information available it is difficult to distinguish between materiel problems (such as ASW sensors) and personnel shortcomings. There is evidence of major materiel casualties in Argentine ships that could be attributed to lack of adequate maintenance.

Most of the approximately 12,000 Argentine ground troops in the Falklands were Army. Virtually all of the junior enlisted men were conscripts who were inexperienced. About 1,000 of the troops were Marines and they conducted themselves well in combat.

Argentine leadership exhibited major failures in staff planning and logistic support in the Army; this was reflected in the poor employment and condition of the ground troops. There were some exceptions, but in general the Argentine troops, who were more numerous and in some respects better equipped than the British ground units, could have been a more effective fighting force.

British Performance

British military forces demonstrated an almost uniformly high standard of skill and performance. This was true of the forces employed in the capture of the Falklands and South Georgia, as well as the small detachments of Royal Marines who were on the islands when the Argentine troops originally landed on 2-3 April. Those detachments made a determined defensive stand, particularly at South Georgia, where they damaged an Argentine corvette and shot down a helicopter before being instructed to surrender.

The high standard of performance by British forces occurred in severe climatological environment. In particular, Harrier and helicopter pilots took off and landed in weather conditions far worse than operational norms. Extreme environmental conditions such as "white out" were encountered by helicopters operating with Special Forces in the Falklands. (In one instance, during a blizzard a helicopter pilot managed to recover an SAS team plus the crews of two helicopters that had crashed earlier on South Georgia.) Once ashore in the Falklands, some ground units undertook difficult treks over rough terrain, for long distances, with individual soldiers carrying loads of more than 100 pounds. These efforts, coupled with agressive patrolling and extensive night operations, demonstrated an extremely high level of training by the British units.

Factors contributing to excellent British performance, especially that of the Royal Marines, included intensive Arctic training in Norway, as well as emphasis on unit cohesion and esprit de corps.

British personnel losses at sea and in ground combat were relatively low. At sea, the wearing of foul weather gear and special flash-protective clothing reduced burn casualties. The relatively low number of deaths ashore was attributed to helicopter evacuation of casualties and the excellent medical training of British troops. The availability of hospital facilities afloat and the physical fitness of the ground forces also contributed to limiting casualties. The improvement of protective flash clothing for shipboard use is a major U.S. Navy concern and is receiving high level attention.

Issues and Lessons

The major factors in the success of the British forces in the Falklands conflict were skill, stamina, and determination. As already noted, the British military, like that of the United States, is an all-volunteer force. We believe that today's U.S. sailor is the best trained in the world. Recent changes in naval officer assignment policy and the realignment of Naval War College courses will further improve the tactical skills of our officers. The overall Reagan Administration attitude toward national defense is having a very positive impact on the morale of Navy and Marine Corps personnel.

M. Press Coverage

The national attitudes toward press coverage of the conflict by Argentina and Britain were quite different. In general, the Argentine government suppressed coverage of the conflict, except for official statements from the capital city.

The British government carried out an intensive effort at home and abroad to put forward the British viewpoint and to make news from the war zone available to the news media as soon as possible. In doing so, the British were sensitive to operational security considerations and the need to reduce anxiety of the families of men in the combat area. Accordingly, certain restrictions on press coverage were put in effect. News media representatives were embarked in the British Task Force sent to the South Atlantic. Their stories were subject to censorship before being transmitted to the Ministry of Defence (MOD) in London and again before being released by MOD.

Still, there appear to have been press leaks of sensitive information, although full details are not yet available. Also, some news stories may have benefited the British forces, as journalists were encouraged to speculate on certain British options in order to confuse the Argentines about actual British intentions. This speculation included reports that the British would initially conduct only hit-and-run raids, and not a large-scale amphibious landing in the Falklands.

Issues and Lessons

The Argentine and British governments were both able to better control the flow of news from the war zone than in many previous conflicts, such as the Vietnam War and the Israeli invasion of Lebanon in 1982. This control was possible because of the remote location of the conflict, the difficulty of reaching the Falklands, and the lack of civilian communications from the scene.

The British Ministry of Defence has commissioned a study by the University College in Cardiff to examine the relationship between the media and the government in time of war.

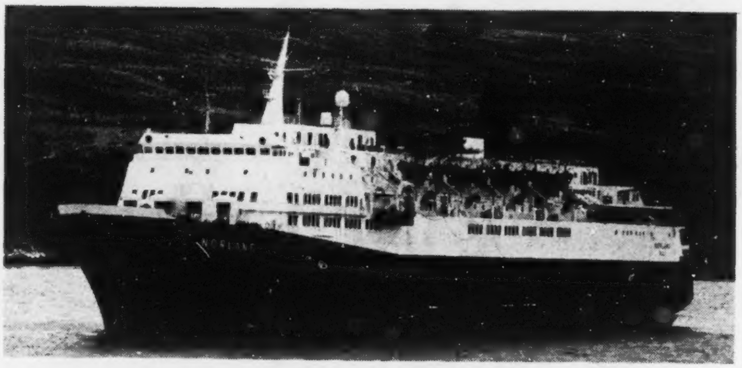
N. Readiness and Mobilization

In response to Argentine actions in the Falklands and South Georgia, on 29 March the British Commander-in-Chief, Fleet, directed that the Flag Officer, First Flotilla, prepare to dispatch a task group to the South Atlantic. Subsequently, three nuclear attack submarines (SSN) were ordered to take on stores and proceed to the South Atlantic. These were the first precautionary British actions in the Falklands.

After the Argentine landing of troops in the Falklands on the night of 1-2 April, the British government initiated a number of military and political actions. RN ships began sailing almost immediately from ports in Britain and from Gibraltar for the South Atlantic. The aircraft carriers INVINCIBLE and HERMES, with their air squadrons embarked, departed Portsmouth on 5 April.

Several British actions were particularly significant because of their indication of readiness and mobilization capability. These included:

- Obtaining 50 commercial ships for logistics, troop transport, hospital, support, and mine countermeasure functions. Except for the five trawlers taken for the MCM role, in all cases civilian crews sailed the ships. All of these ships were modified in some way for their role in the war (described in 3.J.).
- Establishing additional naval air squadrons to support Falklands operations.
- Exercising and maintaining the ships and, in the case of the carriers, their aircraft, while en route to Ascension and the Falklands. The rapidity with which British forces were dispatched meant that some ships and units were not fully prepared, and a vigorous training and preparation program was undertaken on the passage south.



The North Sea passenger/vehicle ferry NORLAND was typical of the Ships Taken Up From Trade (STUFT) employed by the British to supplement their amphibious lift capabilities. Here the ship is anchored in Falkland Sound, while helicopters carry troops and equipment ashore.

ROYAL AIR FORCE
296

A closeup of the receiving probe fitted to an RAF Hercules. Some of the aircraft were also fitted as tankers. Other aircraft innovations included fitting Nimrods to carry Sidewinder and Harpoon missiles.

- Virtually every type of British aircraft committed to the campaign received rapid modifications to enhance operational capability. The Nimrod maritime patrol, Vulcan strategic bomber, and Hercules cargo aircraft were modified for in-flight refueling, with some also configured to serve as aerial tankers. In addition, the Nimrods were fitted to carry Sidewinder air-to-air missiles and Harpoon antiship missiles.

- Training large numbers of flight crews in in-flight refueling techniques and instructing RAF Harrier pilots in ski-jump operations from the British carriers.

- Moving vast amounts of stores and support equipment to Ascension Island. Wideawake Airfield on the island had previously had an average of only three flights per week; this increased about 50 fold during the conflict, with thousands of additional personnel being sent to the island.

Issues and Lessons

The rapidity with which the British forces deployed was remarkable, especially considering the current size and capabilities of the Royal Navy. In a similar situation, the forward-deployment posture of the U.S. Navy and the general high state of readiness of U.S. forces would permit us to respond in an equally rapid manner. Also, a small number of merchant ships could be made immediately available for U.S. military requirements from the Ready Reserve Force.

In a Falklands-like situation, the U.S. Navy would probably deploy at least two carrier battle groups and a Marine Amphibious Brigade (MAB), i.e., approximately 15 percent of the carrier battle groups and almost one-half of the amphibious lift in the current fleet.

While these forces are readily available within the current Navy force structure, the world-wide interests of the United States require contingency planning for multiple and sustained crisis situations. For example, when the U.S. Navy originally deployed two carrier battle groups and amphibious ships in the Indian Ocean while still maintaining battle groups in the Mediterranean and Western Pacific areas, this sustained, widespread demand for logistic support resulted in a shortfall in logistic support ships. This shortfall was met by purchasing two excess British store ships for U.S. service (AFS type). The resupply of combat expenditures of munitions would have created even more problems for the naval logistic system. The five-year shipbuilding program continues the construction of fleet oilers (AO) and restarts the construction of ammunition ships (AE) and fast combat support ships (AOE).

At the same time, the distance from Diego Garcia, our major staging base, and the Arabian Sea operating area placed a heavy strain on land-based naval aircraft, especially the C-2 Greyhound and P-3 Orion.

Both types are being modified for in-flight refueling, while the C-2 production line is being restarted to provide additional cargo aircraft that can deliver high-priority material directly aboard aircraft carriers, supplementing the older C-1 Trader and the 12 C-2 and 4 US-3A Viking cargo aircraft now in the fleet. The use of the heavy-lift MH-53E for cargo delivery within the battle group as well as amphibious forces will improve fleet readiness.

O. Ship Survivability

Argentine Casualties

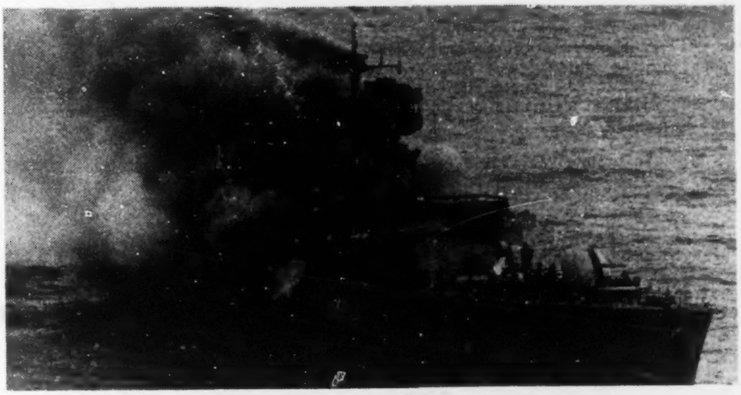
The major Argentine ship loss in the Falklands conflict was the cruiser GENERAL BELGRANO, sunk by a British SSN. The cruiser was struck by two MK VIII torpedoes, each with a 750-pound warhead. The poor material condition of the 44-year-old cruiser and probable limited damage control training by the crew resulted in rapid, uncontrollable flooding and loss of the ship.

British Casualties

The British lost a total of six ships with several others damaged. The latter included nine ships hit by bombs that did not detonate and were subsequently defuzed, although the frigate ANTELOPE sank as a result of damage sustained when an unexploded bomb blew up as it was being defuzed. Two of the British losses were caused by Exocet missiles launched by Argentine Super Etendard aircraft. Their loss is particularly instructive.

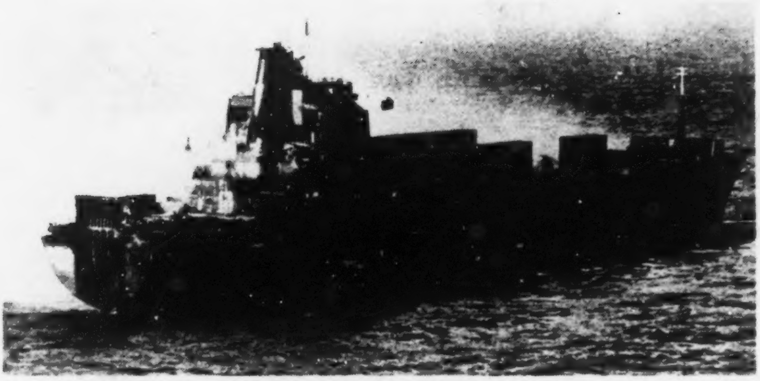
The SHEFFIELD was a 4,100-ton Type 42 destroyer completed in 1975. She was struck by one of two Exocet missiles fired by Argentine Super Etendard aircraft. The missile struck her on the starboard side amidships, penetrated a fuel tank, and smashed into machinery spaces. The Exocet's 360-pound warhead apparently did not detonate. Burning residual fuel from the missile ignited fuel fires, resulting in thick, black acrid smoke being spread through the ship's ventilation system. The missile and subsequent fires destroyed communication cables and fire mains. The ship's company fought the fires for 4-1/2 hours before the ship had to be abandoned. Twenty men were lost in the fire. The SHEFFIELD subsequently sank several days later in heavy seas while under tow.

The merchant ship ATLANTIC CONVEYOR was struck by one and possibly two aircraft-launched Exocet missiles, whose warheads are not believed to have detonated. She was loaded with aluminum freight containers, aircraft, and combustable materials, including fuel and ammunition. Without the extensive damage-control features found in a warship and without the trained damage-control personnel available in a warship to fight fires, she was quickly engulfed in flames and burned out, sinking three days later. Three RN personnel and nine merchant officers and men, including the ship's master, were killed.

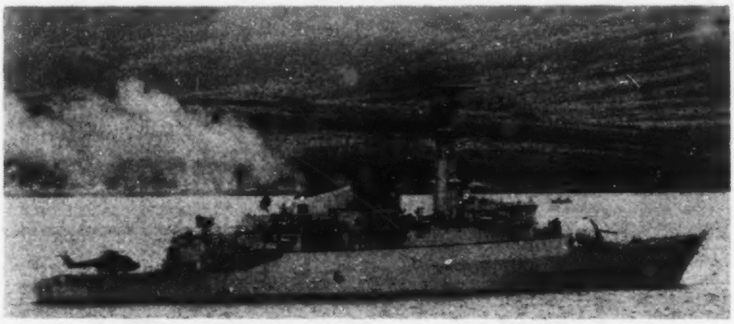


The destroyer HMS SHEFFIELD after being struck by an Exocet missile. The ship lacked advanced missile warning and defense systems of the type being installed in U.S. surface combats.

HMS SHEFFIELD on fire after being struck by an Exocet missile. Note the relatively small size of the hole where the missile hit; the missile's warhead did not detonate, but burning residual fuel ignited fuel fires in the destroyer, leading to her loss.



The aircraft-carrying merchant ship ATLANTIC CONVEYOR burned out after being struck by one or possibly two Exocet missiles. She lacked defensive systems and damage-control features and carried a highly flammable cargo including fuel, ammunition and several helicopters.



Bombs destroyed four Royal Navy ships and damaged several others in the Falklands conflict. This is the frigate HMS ANTELOPE after being bombed, with the hole in her starboard side where an unexploded bomb entered. The bomb later detonated while being defused, starting fires which caused the sinking of the ship.

It is significant to note that a second destroyer, the 6,200-ton GLAMORGAN (completed 1966) was also struck by an Exocet missile, launched from shore. The missile struck next to the helicopter hangar, and the warhead detonated. The still-burning rocket motor skidded into the hangar, causing a major fire. Shrapnel from the explosion killed 13 men on the deck below and the ensuing fire destroyed the hangar and helicopter inside. The ship was able to continue operations with her weapons systems nearly intact.

Issues and Lessons

In general, the cost (and size) constrained British ship designs of the mid-1960's, the Type 42 destroyer and the Type 21 frigate, were the only classes of combatants lost by the RN. On the other hand, both newer (Type 22 frigate) and older (county class destroyers) design ships absorbed substantial punishment and were able to survive. While other factors cannot be discounted in this comparison, one can safely conclude that had the Type 42's and Type 21's been designed and constructed with survivability, rather than cost, as a primary consideration, at least one of the four ships lost might be afloat today, resulting in a substantial savings, overall, for a relatively modest additional investment.

There has been extensive discussion of the effects of aluminum in warship construction and its effect on ship survivability. Aluminum is used in British and American ships for nonstructural bulkheads, ladders, and ventilation ducts. Most U.S. warships of post-World War II construction have aluminum superstructures because of the weight savings, particularly important when the ships carry radar antennas and other equipment relatively high above their centers of gravity.

The SHEFFIELD had a steel superstructure, although one class of British frigates has aluminum superstructures. There is no evidence that the use of aluminum contributed to the loss of any British combatant ship.

The potential vulnerability of aluminum, which loses strength under moderately high temperatures, has long been recognized by the U.S. Navy. The decision to provide a steel superstructure in the new ARLEIGH BURKE (DDG-51) class destroyers was made long before the Falklands conflict, as was the decision to improve survivability of certain existing classes of combatants by the installation of Kevlar armor and fire retardant insulation in key spaces in these ships.

In general, U.S. warships have outstanding damage-control and fire-fighting features, and well-trained crews. This has been demonstrated in several peacetime operational accidents. On the basis of the British experience in the Falklands, the U.S. Navy is reviewing construction techniques and damage control procedures, especially with regard to our smaller, frigate-type ships. British experience with flash protective clothing and battle dress underscores our own efforts to improve shipboard personnel survivability and protection.

U.S. ships are believed to be less vulnerable to fires when in a state of combat readiness (i.e., General Quarters) than were the British ships. However, the materiel condition of U.S. ships with respect to flammable materiels is under constant review.

P. Special Forces Operations

The British made extensive use of Special Forces in the Falklands--units of the Army's Special Air Service and the Royal Marines' Special Boat Squadron. SAS and SBS teams went ashore numerous times to collect intelligence, carry out reconnaissance, conduct raids to confuse and disorganize Argentine forces, and to destroy supplies and equipment. In one operation an SAS raiding party, supported by 4.5-inch gunfire from the destroyer GLAMORGAN, destroyed an ammunition dump, stores, and 11 aircraft. These SAS and SBS activities were characterized by a low casualty rate, in part because of the physical fitness and skill of the SAS-SBS personnel, and the initiative and skill of the crews of the helicopters and ships that supported them in these operations.

These teams were put ashore by helicopter, small boat, and submarine. Their activities--sometimes referred to as "Unconventional Warfare"--had a significant influence on the outcome of the conflict.

Issues and Lessons

The U.S. Navy's SEAL (Sea-Air-Land) and UDT (Underwater Demolition Team) units, as well as Marine Corps Reconnaissance units, are especially adept at conducting unconventional warfare operations. However, several aspects of the British SAS and SBS operations in the Falklands warrant additional study by U.S. planners in this field. Of particular interest is the extensive and highly successful use of night vision devices by British helicopter pilots, naval gunfire spotters, and ground troops. The U.S. Navy and Marine Corp are upgrading their night vision capability through development and procurement of lightweight, state-of-the-art night vision systems.

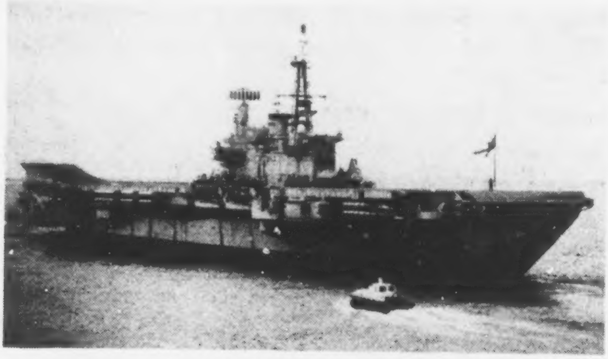
Q. Submarine Operations

Argentine Submarine Operations

The Argentine Navy began the conflict with two operational submarines--one relatively new, German Type 209 diesel-electric submarine and one former U.S. GUPPY-type submarine of World War II construction. The GUPPY-type submarine SANTA FE, which was present when Argentine troops landed in the Falklands, was subsequently put out of action by British forces off South Georgia on 25 April.

The German-built SAN LUIS (completed in 1974) made a patrol of an estimated 36 days during the conflict. The SAN LUIS reportedly located and

The Argentine submarine, A.R.A. SANTA FE, sunk alongside the pier in South Georgia, after being attacked on the surface by British helicopters. The British had considerable success using helicopters armed with antiship missiles against the SANTA FE and several surface ships.



HMS HERMES, showing the ship's 12° ski-jump ramp which facilitates Harrier takeoffs with increased payloads. HMS INVINCIBLE has a 7° ramp. Despite their small size, both carriers were able to successfully operate Harriers in the heavy seas of the South Atlantic.

operated in the area of the main British Task Force for several days. However, the submarine was unable to make a successful attack because of materiel problems. The submarine's main torpedo fire control panel was not operational and improper wiring of the backup panel caused all torpedoes that were launched to be fired on incorrect bearings. (The Argentine Type 209 submarine SALTA did not go to sea during the conflict because of problems with her diesel engines.)

British Submarine Operations

As the crisis escalated in the South Atlantic in late March, three British nuclear attack submarines (SSN) were directed to take on stores and deploy to the Falklands area. The ability of these nuclear-powered attack submarines to transit at high sustained speeds permitted the British government to establish an exclusion zone 200 nautical miles in radius around the Falklands early in the conflict. Initially, SSNs enforced this exclusion zone to prevent Argentine ships from further reinforcing the garrison in the Falklands. The availability of SSNs allowed the expansion of British sea control, and on 7 May the British government warned that any Argentine warships sighted more than 12 miles from the Argentine coast would be regarded as hostile and subject to attack. Ultimately, the RN deployed five SSNs and one diesel-electric submarine (HMS ONYX) to the South Atlantic.

One of these submarines was sent to South Georgia in late April to ensure that Argentine ships did not interfere with the recapture of that island by Royal Marines and SAS units. The following week that submarine, HMS CONQUEROR, successfully intercepted and sank the Argentine cruiser GENERAL BELGRANO.

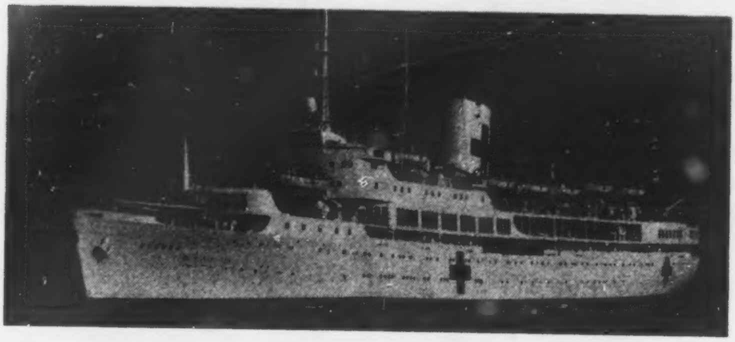
Issues and Lessons

Submarines played a significant role in the Falklands conflict by their actual operations and by the threat of their actions. The loss of a British aircraft carrier or troop transport to submarine attack might well have curtailed the entire British operation.

Similarly, the British SSNs appear to have served as a deterrent to Argentine surface naval operations, especially after the sinking of the GENERAL BELGRANO. British submarines also served in the reconnaissance and intelligence collection roles.

In a similar crisis or conflict the U.S. Navy could employ its attack submarine force in the same manner. Additionally, U.S. SSNs could provide direct support to carrier battle groups, increasing their ASW effectiveness, while the submarine-launched Harpoon and Tomahawk missiles provide enhanced antiship and strike capabilities to SSNs. The operating characteristics of SSNs also permit their early, clandestine deployment in time of crisis, giving increased flexibility to national leaders.

The roll-on/roll-off vehicle cargo ship ELK participated in the conflict still carrying her commercial line name "Ferrymasters." Except for trawlers taken on for minesweeping, the merchant ships had civilian crews, with Naval communications and other specialized personnel assigned to some ships.



The youth training ship Uganda was rapidly converted to a hospital ship at the Naval dockyard in Gilbraltar. Three Naval survey ships were also modified for use as "ambulance" ships, to provide rapid casualty evacuation and treatment.

R. Surface Ship Operations

Argentine Surface Ship Operations

The Argentine Navy initially sortied four groups of surface ships, including nine ships armed with Exocet antiship missiles. After the loss of the GENERAL BELGRANO on 2 May there were no further significant Argentine surface combatant operations.

British Surface Ship Operations

The primary role of British surface combatants in the Falklands conflict was to provide AAW/ASW defense for the British aircraft carriers and amphibious shipping, with a secondary role of shore bombardment. Their AAW/ASW effort was effective, although not without the loss of several destroyers and frigates. However, neither of the carriers was damaged and amphibious shipping losses were relatively small in view of the number of amphibious and merchant ships involved in the operation.

A secondary role for surface combatants was shore bombardment, and the ships were highly effective in this role, despite the small gun caliber available (i.e., 4.5-inch).

Issues and Lessons

The U.S. Navy's surface combatants could be expected to be more effective in the AAW/ASW roles because of their superior weapons and sensors, even in the face of more advanced Soviet systems. Further, the availability of Harpoon and Tomahawk missiles provides U.S. cruisers and destroyers with a formidable long range antiship capability.

Defense of aircraft carriers and amphibious forces is vital if those two "force projection" elements are to continue to be viable instruments of national power. Thus, the "defensive" role of surface combatants must continue to be stressed through the improvement of area AAW and ASW defense weapons.

Conclusion

The Falklands conflict was a major naval campaign which included a variety of air, surface, submarine, and ground operations. These included several "firsts" in combat at sea. The U.S. Navy and Marine Corps have examined the conflict to determine those lessons that would apply to U.S. planning and new programs.

Appropriate data from the Falklands have now been incorporated in the U.S. Navy and Marine Corps planning process. In general, the "lessons learned" indicate that current Navy and Marine planning for limited conflicts similar to the Falklands situation is correct.

Appendix A FALKLAND ISLANDS STUDY GROUP

Steering Group

Chairman	Melvyn R. Paisley, Assistant Secretary of the Navy (Research, Engineering and Systems)
Members	Gerald A. Cann, Principal Deputy ASN(RE&S) Robert M. Hillyer, Director of Navy Laboratories Andrew W. Marshall, Director of Net Assessment, Office of the Secretary of Defense Norman Polmar, Consultant Dov S. Zakheim, Special Assistant, Under Secretary of Defense (Policy) Vice Admiral L. Baggett Jr., Director of Naval Warfare (OP-095) Vice Admiral E.B. Fowler, Commander, Naval Sea Systems Command Rear Admiral C.C. Smith Jr., Director, Office of Program Appraisal (OPA) Rear Admiral John L. Butts, Director of Naval Intelligence (OP-009) Brigadier General E.B. Russell, Deputy Chief of Staff (Research, Development and Studies), Headquarters, U.S. Marine Corps Commander R.D. Tucker, Office ASN(RE&S)

Study Group

Director	Captain John W. Walker (OPA)
Members	Captain Roland Brandquist (OP-96) Captain Ronald C. Trossbach (OP-35) Colonel J. Pipta (PP&O, Headquarters, Marine Corps) Commander Richard Farrell (OP-50) Commander G.D. James (Nav Sea-913) Lieutenant M. Sidrow (CNA) A.D. Baker III (OPA) A.E. Brandenstein (OEG) L.S. Straus (OEG)

Notes:
ASN(RE&S) = Assistant Secretary of the Navy (Research, Engineering and Systems)
CNA = Center for Naval Analyses
NavSea = Naval Sea Systems Command
OEG = Operations Evaluation Group
OP-( ) = Office of the Chief of Naval Operations
OPA = Office of Program Appraisal
PP&O = Plans, Policies and Operations

Appendix B FORCES ENGAGED

British Forces

The following ships participated in British operations in the South Atlantic. The Royal Fleet Auxiliary (RFA) ships are government-owned and civilian-manned; the Ships Taken Up From Trade (STUFT) retained their merchant crews except for the trawlers modified for use as minesweepers which were assigned naval crews. However, naval communications personnel and other specialists were placed on board most merchant ships.

Royal Navy

- 5 Fleet Submarines (nuclear propelled)
  - 3 VALIANT class
  - 2 SWIFTSURE class
- 1 Patrol Submarine (diesel-electric)
  - OBERON class
- 2 V/STOL Aircraft Carriers[1]
  - HERMES
  - 1 INVINCIBLE class
- 2 Assault Ships)
  - FEARLESS class
- 8 Guided Missile Destroyers
  - 2 County class
  - 1 Type 82
  - 5 Type 42
- 15 Frigates
  - 2 ROTHESAY class
  - 4 LEANDER class
  - 7 Type 21
  - 2 Type 22
- 2 Offshore Patrol Ships
  - Castle class
- 1 Ice Patrol Ship
  - ENDURANCE
- 3 Survey Ships (employed as medical evacuation ships)
  - HECLA class

Royal Maritime Auxiliary Service

- 1 Mooring and Salvage Vessel
- 1 Tug

Royal Fleet Auxiliary

- 10 Oilers
- 4 Replenishment Ships
- 1 Stores Support Ship

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[1] HMS INVINCIBLE is officially designated as an ASW carrier and HMS HERMES as an ASW/commando carrier.

Royal Fleet Auxiliary (Continued)

- 1 Helicopter Support Ship
- 6 Logistic Landing Ships

Ships Taken Up From Trade

- 2 Liners
- 1 Training Ship (converted to hospital ship)
- 4 Passenger--Cargo Ships
- 6 Cargo Ships
- 8 Roll-On/Roll-Off--Container Ships
- 1 Container Ship
- 15 Tankers
- 4 Offshore Support Vessels
- 3 Tugs
- 1 Cable Ship
- 5 Trawlers (for use as minesweepers)

The following were the naval air units that participated in the Falklands conflict. The ships that they operated from are indicated in parentheses. The aircraft in these squadrons totaled 28 Sea Harriers and more than 150 helicopters.

Fleet Air Arm Squadrons

- 4 squadrons with Sea Harrier V/STOL aircraft (aircraft carriers)
- 1 squadron with Lynx MK 2 helicopters (aircraft carriers, destroyers, frigates)
- 5 squadrons with Sea King MK 2/4/5 helicopters (aircraft carriers, assault ships, auxiliary ships, merchant ships)
- 1 squadron with Wasp MK 1 helicopters (frigates, ice patrol ship, survey ships, merchant ships)
- 4 squadrons with Wessex Mk 3/5 helicopters (destroyers, auxiliary ships, merchant ships)

The 3rd Commando Brigade Air Squadron of the Royal Marines operated Gazelle and Scout helicopters in the campaign.

In addition, the Royal Air Force deployed 10 HARRIER GR.3 VSTOL aircraft and four Chinook helicopters to the Falklands (with three of the latter lost with the destruction of the merchant ship ATLANTIC CONVEYOR).

Several squadrons of RAF aircraft based in the United Kingdom and on Ascension Island also supported operations in the South Atlantic. These squadrons flew the following principal types of aircraft:

- Chinook heavy-lift helicopters
- Hercules cargo aircraft and tankers
- Nimrod maritime patrol aircraft
- Phantom FGR 2 fighter aircraft
- Sea King search-and-rescue helicopters
- VC 10 cargo aircraft

- VICTOR K 2 tanker aircraft
- VULCAN B strike aircraft

British Ground Forces

- 3rd Commando Brigade (Royal Marines)
- 5th Infantry Brigade (Army)

Argentine Forces

The following list contains all major Argentine naval ships available at the time of the Falklands conflict.

- 4 Submarines[2]
  - 2 Ex-US GUPPY type
  - 2 Type 209
- 1 Aircraft Carrier
  - Ex-British COLOSSUS class
- 1 Light Cruiser
  - Ex-US BROOKLYN class
- 7 Destroyers
  - 1 ex-US FLETCHER class
  - 3 ex-US ALLEN M. SUMNER class
  - 1 ex-US GEARING class
  - 2 Type 42
- 3 Frigates
  - A-69 type
- 9 Corvettes
- 6 Patrol Boats
- 6 Minesweepers/Mine Hunters
- 1 Tank Landing Ship
- 3 Hydrographic Ships
- 1 Antarctic Support Ship
- 5 Transports
- 1 Fleet Replenishment Oiler
- 1 Tanker
- 4 Tugs

The Argentine naval air arm operated the following aircraft. All operated from land bases during the conflict.

- 5 Super Etendard fighter-bombers (carrier based)
- 10 A-4Q Skyhawk fighter-bombers (carrier based)
- 5 S-2A Tracker ASW aircraft (carrier based)
- 2 SP-2E Neptune maritime patrol aircraft
- 10 MB.339 trainer/ground attack aircraft

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[2] One Type 209 and one GUPPY were not operational at the time of the conflict.

Various helicopters and training aircraft were also flown by the Argentine Navy.

The Argentine Air Force operated approximately 50 Skyhawk fighter-bombers, 40 Mirage III/V fighters, 5 Canberra light bombers, 60 PUCARA ground support aircraft, plus helicopters, transports including two KC-130 Hercules tankers, and training aircraft. The Air Force also flew a modified Boeing 707 in the long-range reconnaissance role.

Argentine Ground Forces

11,000 Army
1,000 Marines

Appendix C COMBAT LOSSES

British Losses

Ships Sunk (Cause):

Destroyer	SHEFFIELD	(Exocet/fire)
Destroyer	COVENTRY	(bombs)
Frigate	ARDENT	(bombs)
Frigate	ANTELOPE	(bombs)
Landing Ship	SIR GALAHAD	(bombs/fire))
Merchant Ship	ATLANTIC CONVEYOR	(Exocet/fire)

In addition, 2 British destroyers, 14 frigates, and 2 landing ships were damaged during the conflict, all to Argentine air attacks with bombs, rockets, and cannon except for the destroyer GLAMORGAN, which was damaged by a shore-launched Exocet missile.

Aircraft Lost to Enemy Action:

2 Sea Harrier V/STOL aircraft
3 Harrier GR.3 V/STOL aircraft
4 Gazelle helicopters
3 Scout helicopters
12

Aircraft Lost Aboard Ships Sunk or Damaged:

3 Chinook helicopters
3 Lynx helicopters
1 Wessex 3 helicopter
6 Wessex 5 helicopters
13

Aircraft Lost Operationally:

4 Sea Harrier V/STOL aircraft
1 Harrier GR.3 V/STOL aircraft
3 Sea King 4 helicopters
2 Sea King 5 helicopters
2 Wessex 5 helicopters
12

Argentine Losses

Ships Sunk (Cause):

Submarine	SANTA FE	(helicopters)
Cruiser	GENERAL BELGRANO	(submarines)

Trawler[1]	NARWHAL	(aircraft)
Cargo ship	RIO CARCARANA	(helicopters/ aircraft)
Transport	BAHIA BUEN SUCESO	(captured)
Store ship	ISLAS DE LOS ESTADOS	(gunfire)
1 Patrol craft		(helicopters)

Ships Damaged (Cause):

1 corvette	(antitank missile)
1 patrol tug	(helicopters)

Aircraft Destroyed (British estimate):

Lost to Sidewinder missiles from Sea Harriers	16 + 1 probable
Lost to 30 mm cannon Sea Harriers	4 + 2 probable
Lost to Sea Wolf missiles	5
Lost to Sea Dart missiles	8
Lost to Sea Cat missiles	8 + 2 probable
Lost to ground missiles	24 + 8 probable
Lost to shipboard guns and small arms	7 + 1 probable
Destroyed on ground (to bombs, strafing, naval gunfire, and Special Forces)	31
	103 + 14 probable

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[1] Employed as intelligence collection ship.

APPENDIX D

GEOGRAPHY AND CLIMATE

The Falkland Islands are in the South Atlantic, just south of latitude 50° south, some 400 nautical miles east of Argentina. The smaller island of South Georgia lies 780 miles east of the Falklands, and the small South Sandwich Islands about 400 miles to the east of South Georgia.

The Falklands consist of two main islands and about 200 smaller islands with a total land area of 4,700 square miles. East and West Falklands are divided by the Falkland Sound, which at its narrowest point is 2.4 nautical miles across. Stanley, the capital, is on the east coast of East Falkland and had a population of 1,200 out of the 1,800 people living in the Falklands at the time the conflict began.

The coastline of the Falklands is irregular, with numerous small, restricted beaches. The highest ground is in the northern half of East and West Falkland Islands and is between 1,300 and 2,280 feet above sea level. The countryside is very rough and difficult to cross by foot or vehicle. There are only 30 miles of paved roads in the islands. The few trees are man-planted. The islanders relied heavily on air transport, with more than 30 airstrips scattered throughout the islands; five of the strips were usable by C-130 Hercules cargo aircraft. The largest airfield is at Port Stanley.

High winds and a low temperature range characterize the Falkland Islands climate. Mean temperatures by day generally range from 32°F and 20°F in winter. The average rainfall is about 27 inches, spread evenly over the year, with snow falling about 50 days per year. The winds throughout the year blow at about 20 knots two-thirds of the time, with steep seas and regular gale-force winds offshore.

In a word, the Falklands are "inhospitable."

Appendix E GLOSSARY

AAW	Antiair Warfare
AEW	Airborne Early Warning
A.R.A.	Armada Republica Argentina
ASMD	Antiship Missile Defense
ASU	Antisurface Ship Warfare
ASW	Antisubmarine Warfare
CAP	Combat Air Patrol
CIWS	Close-In Weapon System
COMSEC	Communications Security
ECM	Electronic Countermeasures
EW	Electronic Warfare
LAMPS	Light Airborne Multi-Purpose System (helicopter)
MAF	Marine Amphibious Force (U.S. organization)
MCM	Mine Countermeasures
NGF	Naval Gunfire Support
NRF	Naval Reserve Force (U.S.)
OTH	Over-the-Horizon (targeting)
RAF	Royal Air Force
RFA	Royal Fleet Auxiliary
RN	Royal Navy
RRF	Ready Reserve Force (U.S.)
SAS	Special Air Service
SBS	Special Boat Squadron
SEAL	Sea-Air-Land (team) (U.S. Navy)
SLOC	Sea Line of Communications
STUFT	Ships Taken Up From Trade
3-D	Three-Dimensional (radar)
UDT	Underwater Demolition Team (U.S.)
URG	Underway Replenishment Group
USAF	U.S. Air Force
USN	U.S. Navy
V/STOL	Vertical/Short Take-Off and Landing (aircraft)

SHIP DESIGNATIONS

AE	Ammunition ship
AFS	Combat store ship
AO	Oiler
AOE	Fast combat support ship
LCAC	Landing craft air cushion
LKA	Amphibious cargo ship
LPD	Amphibious transport dock
LSL	Logistics landing ship
MCM	Mine countermeasures ship
MSH	Minehunting ship
SSN	Attack submarine (nuclear powered)

PHOTO CREDITS

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INDEX

A

Page

- A/C replace the CT-39, leasing of 3186
- ADCAP program 3205
- Advanced lightweight torpedo 3204
- Aegis:
  - Radar set 3094
  - Testing 3232, 3233
- Air programs 3198
- Air-to-air missile:
  - Procurement 3086
  - Shortages 8036
- Aircraft carriers:
  - 50-50 sharing 3058
  - Affordability 3278
  - Force levels 3024
- Aircraft, land-based Soviet 2971
- Airlift 3161
  - Acquisition plan, long range 3172
  - Capability, fiscal year 1983 programed versus CMMS requirement 3156, 3157
  - Capability, improving our 3157
  - Force posture 3155
  - Master plan, long range 3187
  - Mission 3153
  - Programs 3149
- Allied cooperation 3148
- Ammunition, transfer of 3085
- Amphibious:
  - Assault 3202
  - Assault ship, LHD 1 3037
  - Forces 3026
  - Lift capability 2981
  - Operations 3266
  - Ships 1970-79 2981
  - Shipping program 3280
- Amphibious ship service life extension program (SLEP) 3075
  - LPD 4 SLEP 3038
- Antiair warfare 2961
  - Capability 2962
  - Missiles 3081
- Antiarmor 3237
- Anticarrier warfare 2977
- Antiship cruise missiles 2976
- Antiship missile defense 3246
  - System 3208
- Antisubmarine warfare 2959, 2988, 3200
  - Becoming increasingly difficult 2961
  - Defense in depth concept 2961
  - Helicopter program 3191
- Arleigh Burke class guided missile destroyer DDG 51 3033
- Army ADA compiler 3249
- Artillery enhancement 3236

Page

Attack submarine:
  Building rates 2981
  Deliveries, 1970–79 2981
  Force levels 3070
  Forces 3024

B

Backfire bomber 2942, 2943, 2972
  Capability 2952
Battle casualties 2965
Battleships 3285
  Estimates, fiscal year 1983 3017
  Reactivation, BB(R) 3014, 3035
Budget priorities 3146

C

C–5 3169
  Production tooling, survey of 3183
C–5's and C–141's, protection for 3178
C–54:
  Rewinged 3182
  Wing mod program 3183
C–5B 3163, 3183
  Manpower projections 3167
  Procurement, advantages of 3180
C–17 3158, 3163
  As the next generation airlifter 3173
  Combat role 3178
  Program, define 3186
  Program estimates 3187
  R&D 3187
  R&D, alternative funding 3182
  Reprograming, status of 3185
C–130 3158
C–130 and C–141, replacement aircraft for 3152
C–130A/C–141 A/C replacements 3182
C–140B replacement 3187
C–141 replacement 3183
CG–47 cruisers 3082, 3083, 3287
CT–39 3175
  Program, describe 3181
Capabilities and alternatives, assessment of 2976
Carrier battle groups 3086
Carrier service life extension program, CV SLEP 3031
CBO:
  Report—diversion of NATO-designated forces 3148
  Report on the RDF—Army support 3148
Center for Naval analyses 3282
Central command and readiness command, U.S 3101
Chemical and nuclear threats 2971
Civil Reserve Air Fleet (CRAF) enhancement program 3184
Combat service support 3239
Combat stores ship, TAFS 3044
Command and control 3159
Command, control, and communications (C^3) 3238
Command, control, and communications and intelligence 3201
  Computers, embedded 3201
Contract, fixed-price 3057
Conventional shipbuilding, 1970–79 2983
Cost growth 3092
  Cost overruns 3056
  Escalation 3048, 3088
Cost issues, hidden 3099
Costs, eliminating added 3233
CRAF enhancement program 3159, 3164
  Appropriation 3184

Page
Cruise missiles, antiship 2976

D

DDG 51 ..... 3087, 3210, 3222, 3284
  As compared to CG 47 3006
Defense communication agency 3132
Destroyer production 2981
Destroyers without helicopter hangars 3008
Deterrence, failure of 3255
Diesel-electric submarines 3071

E

EP–3 2987
Escalation 3051, 3090
  Request, fiscal year 1984 3091
European:
  A/C, advantages of 3181
European distribution system aircraft (EDSA) 3184
  Procurement competition, status of 3181
  Program, priority to 3180

F

Falklands:
  Campaign 3081
  Lessons learned 3195
Fast logistic ship, TAKR 3046, 3079
Firepower 3236
Fleet:
  Capabilities against ASCM's 2977
  Needs 3196
  Oiler, TAO 187 ..... 3021, 3045
Forger/Harrier comparisons 2944
Forward headquarters 3129, 3145
Funding profile, change in 3179
Funds, advance procurement 3179

G

General officers assigned 3144
GI bill, reinstituting the 3153
Guided missile:
  Cruiser, CG–47 ..... 2999, 3032
  Destroyer, DDG 51 ..... 3004, 3033
  Ships, requirements 3073

H

Hagglund cranes 3294
Headquarter's personnel, comparison 3107
Hospital ship:
  TAH 3042, 3291
  TAHX 3080

I

Iceland purchase of A/C 3174
Intelligence 3255
International programs 3196

J

JTIDS 3242
Joint deployment agency mission 3143

K

KC–10A 3165

Page

Kirov-class CGN ... 2986

L

LHD's ... 3095
LHD–1 ... 3080, 3291
LSD–41 ... 3077, 3079
LAMPS:
  I and II ... 3228
  III ... 3203
  Helicopters ... 3215
  Procurement ... 3228
  Program ... 3191
Land-based TACAIR contribution to maritime operations ... 2988
Landing craft air cushion, LCAC ... 3047, 3080
Landing ship dock, LSD–41 ... 3036
Lease agreements, unusual clauses ... 3098
Lease versus buy programs ... 3181
Lessons of the Falklands, summary report, February 1983 ... 3295
Light armored vehicles (LAV) ... 3144, 3291
Logistics ... 3259
  Support forces ... 3026
  Support problems ... 3147

M

MSC and MTMC ... 3292
Marine Corps:
  Assault vehicles ... 3229
  Programs ... 3236
Management improvements, overview ... 3194
Maneuverability ... 3237
Maritime:
  Naval threat assessment ... 2929
  Pre-positioning ship/TAKX/ship chartering ... 3078
  Pre-positioning ships, leasing plan for ... 3088
Manning levels, Military Airlift Command ... 3167
Manpower allocation ... 3106
Materials, innovative ... 3074
Merchant marine ... 3290
Merchant shipping:
  Protection of ... 2978
  Threat ... 2978
Military airlift command ... 3150
  Manning levels ... 3166
  Mission, overview ... 3154
Military challenge ... 3154
Military sealift command and military traffic management command, proposed consolidation ... 3145
Military traffic management command, consolidating ... 3284
Missile:
  Cruisers and destroyers ... 3070
  Defense systems ... 3221
  Resupply ship, TAK (FBM) ... 3943
Mine countermeasures ship, MCM 1 ... 3018, 3039
Mine warfare ... 3199
  Forces ... 3026
Mines, medium depth ... 3228. 3229
Minesweeper hunter, MSH 1 ... 3020, 3040
Missions and command relationships ... 3117
Mobile protected gun system ... 3230
Modular signal processor, enhanced ... 3243
Morale is high ... 3152

N

Naval forces against Soviet fleet, employment of ... 2988
Naval forces capability ... 2987

Page

- Naval warfare responsibilities, director 2958
- Navigation development, advanced 3241
- Navy:
  - Doctrine choke point 2988
  - Five-year SCN plan, 1984–89 2996, 3027
  - Leasing TAKX ships versus Navy purchasing 3093
  - Shipbuilding programs 2989
  - Strategy/force mismatch 3086
  - Tactical data systems 3241
  - Vulnerability in a nuclear and chemical environment 2973
  - Weapons inventories 3084, 3085
- Navy/Air Force cooperation 3290
- Navy/Marine Corps strategy 3253
- Non-nuclear, non-diesel-electric submarine powerplants 3251
- Non-Soviet threat to U.S. naval forces 2978
- Nuclear and chemical threats 2971
- Nuclear attack submarine, SSN 688 2998, 3030

O

- Ocean survey ship, TAGS 3041, 3077
- Omani troop and USRDF cooperation 3138
- Operations and maintenance 2984
- Ordnance readiness summary, major 3085
- Oscar SS–N–19 threat 2977
- Outfitting/post delivery 3048

P

- Pay cap 3272
- Pay freeze to have severe impact 3152
- Phalanx CIWS 3094
- Procurement, single source 3293
- Program objective memorandum 3146

R

- RDJTF 3143
- RDT&E program 3197
- Rapid Deployment Force 3140
  - Enlarging 3127
  - Size 3141
- Radiated noise trends, U.S 2987
- Readiness and training 3263
- Readiness Command, United States 3142
- Reform caucus 3277
- Research, weapons and ASW aircraft 3189
- Reserves, use of 3168
- Rescue and recovery 3159
- Roll-on/Roll-off ships 3064
- Rotary engine, lightweight 3231

S

- SH–60F 3217, 3226
  - Carrier based ASW helicopter 3205
- SSBN security 2979, 2980
- SSN:
  - 1 3204
  - 688 3251
  - New design 3251
- Science and technology 3197
- Sea-based aircraft 2984
- Sea control, need for 3260
- Sealift 3076
- Second source procurement 3074
- Ship(s):
  - 600, Navy, reaching 3279
  - Acquisitions 2967

Page

- Ship(s)—Continued
  - Control design, funding 3195
  - Deployments 2985
  - Estimates on 3059
  - In fleet during previous and present administration 3277
  - Large versus small 3257
  - Leasing of 3059, 3288
    - Tax implication study 3060
  - Not yet under contract 3054
  - Reactivation costs 3274
- Ship Systems Engineering Standards (SSES) 3076
- Shipboard subsystems development 3240
- Shipbuilding 3095
  - Contracts 3097
  - Indexes 3092
  - Major (1970–79) 2980
  - Other, fiscal year 1984 3048
  - Program 3087, 3270
  - Request, fiscal year 1984 3028
- Shipbuilding and conversion Navy (SCN), fiscal year 1984 budget 3028
- Shipyard:
  - Advertising 3098
  - Security 3099
- Southwest Asia:
  - Budget 3141
  - Deployment of troops 3133
  - Major threats 3139
  - Threats, force response 3140
  - Vital interests and major U.S. objectives 3139
- Soviet(s):
  - ASW capability 2985
  - Amphibious capability 2985, 2986
  - Amphibious force 2945
  - Amphibious lift capability 2986
  - Anticarrier warfare 2985
  - Aviation at sea 2936
  - Bombers 2977
  - CTOL aircraft 2986
    - Carrier 2979
  - Floating dock 2947
  - Merchant marine 2972
  - Naval:
    - Capabilities 2986
    - Deficiencies 2985
    - Growth 2953
    - Trends 2976
  - Navy:
    - Combat proficiency 2984
    - Capabilities 2984
    - Proficiency 2983
    - Size of active fleet 2974
    - Weaknesses 2987
  - Nuclear submarine classes 2959, 2980
  - Power projection 2986
  - Shipbuilding 2968
  - Strategic reserve 2988
  - Submarine force, weapon loadout 3218
  - Submarine production 2968
- Soviet surface force limitations 2985
- Space activity 2949
- Space launches, United States 2949
- Spares 3158
  - Funding for improved readiness, increased 3182
  - Replenishment 3175
- Staffing levels 3144
- Strategic sealift 3048, 3079
- Strategic submarine forces 3023
- Strategy, United States 2979

Page

- Submarine(s):
  - Design, new 3225
  - In Falklands, operation of 3261
  - Oscar 2940
  - Production 2969
  - Reliability 2979
  - Sonar development (engineering) 3247
- Superiority, margin of 2970
- Surface combatant forces 3024
- Surface warfare 3198
- SURTASS 3242

T

- Tactical:
  - Computers, new 3244
  - Embedded computers 3247
- TAKR and TAKX 3293
- Targets 3209
  - Testing against 3220
- Technology transfer 2949
- Termination for convenience of the Government (1974 October) 3065
- Third World threats 2978
- Threats, nuclear and chemical 2971
- Tomahawk cruise missile 3289
  - Cost of 3212
- Tonnage in the seventies, more or less 3061
- Transport command and joint deployment agency, relationship between 3125
- Trident submarine, SSBN 2997, 3029
  - Cost growth 3090
- Typhoon improvements 2942

U

- Unified command plan 3131
- United Kingdom general purpose force procurement 3069
- USCENTCOM missions 3142
- USREDCOM:
  - Joint readiness exercise program 3119
  - New directions for 3118
- U.S. capability versus Soviet capability 2951
- United States, Allied, and Soviet:
  - Naval ship construction, 1970–79 2954, 3062
  - Ship construction, 1980–82 2955, 3063
- U.S./Soviet:
  - Cruise missile comparisons 2984
  - Frigate construction comparison, 1970–79 2982
  - Medium range ASCM comparison 2984
  - USN/RN practices, comparison of selected 3080
  - USN/USAF coordinated operations 2938

V

- Variable payload/ship systems engineering standards (SSES) 3252
- Vulcan bomber 3274
- Vulnerability and survivability 3263

W

- Warfare:
  - Antisubmarine 3200
  - Mine 3199
  - Surface 3198
  - Tasks 2958
- Warsaw Pact ship construction 2974
- Warship production, 1970–79 and 1980–82 2954
- Weapon effectiveness 2986
- Weapons inventories, Navy 3084, 3085
- Wide-body cargo aircraft 3180, 3185